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bulletin

NEWS AND VIEWS IN THE BIOLOGICAL SCIENCES

Vol. III JANUARY • 1953 No. 1

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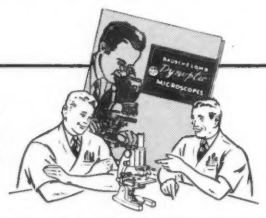

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Across the EDITOR'S DESK

• The Biology Division of the Oak Ridge National Laboratory is sponsoring a research conference on **"Effects of Radiation and Other Deleterious Agents on Embryonic Development"** on April 20-21, 1953 in Oak Ridge. Attendance at the conference will be by invitation.

❖

• Additional copies of **"My Great Oak Tree and Other Poems"** by Dr. Liberty Hyde Bailey, a keepsake issued by the Editors of Chronica Botanica for the members of AIBS attending the meetings at Cornell University are available, free, on request, from the Chronica Botanica Co., Waltham, Mass.

❖

• A **List of Scientific and Technical Journals of Latin America** has been compiled by the Committee on International Scientific Publication of the National Research Council, 28 Newbury Street, Boston 16, Massachusetts and is available at that address.

❖

• The papers presented at a Symposium on the **Development of International Cooperation in Science,** arranged by the National Academy of Sciences—National Research Council in cooperation with the Executive Board of the International Council of Scientific Unions and held in Washington, D. C. on October 18, 1951, have been published. Copies of this publication may be obtained upon request from the Academy-Council Office of International Relations, 2101 Constitution Ave., Washington 25, D. C.

❖

• **Dr. George L. McNew,** Director of the Boyce Thompson Institute for Horticultural Research, visited the Cornell University campus from November 19 to December 18th. During that time Dr. McNew delivered a series of ten lectures on the subject of soil fertility and plant disease, and was available for consultation on subjects relating to plant pathology.

❖

• On October 7, 8, 1952, a working conference of approximately 70 investigators gathered at Arden House, the Harriman campus of Columbia University, New York, to discuss matters related to **tissue transplantation.** This conference was held under the auspices of the Morphology and Genetics Study Section, Division of Research Grants, National Institutes of Health, Public Health Service, Federal Security Agency, and brought together clinicians, geneticists, morphologists, immunologists and embryologists. Foreign liaison was established through the presence of Drs. B. D. Medawar, University of London, England, and P. G. Gaillard, Laboratory of Histology, Leiden, Holland.

Topics discussed and speakers were: Clinical Problems, W. P. Longmire, Jr., University of California; The Initial Host Reaction to the Graft, G. O. Gey, Johns Hopkins University; The Genetics of Transplantation, G. D. Snell, Jackson Memorial Laboratory; Acquired Immunity to the Graft, E. J. Eichwald, Salt Lake General Hospital; Methods of Conditioning the Graft, T. S. Hauschka, The Institute of Cancer Research; and Methods of Conditioning the Host, H. W. Toolan, Sloan Kettering Institute. These papers and the major points of discussion will be published in the *Journal of the National Cancer Institute.*

❖

• **The Conservation Project of the National Association of Biology Teachers** has received widespread support. Over thirty national conservation organizations have endorsed the project and have representatives on the Advisory Committee. There are two objectives: (1) to encourage biology teachers to engage in conservation teaching; and (2) to obtain descriptions of the most successful techniques used in such teaching for publication in a series of pamphlets on conservation teaching. A grant-in-aid of $10,000 from the American Nature Association is being used to underwrite the expenses of state committee work, regional and national meetings to organize the project, and work conferences to review and edit the descriptions and summaries. Several states, including Indiana, North Carolina, and Tennessee have received additional grants from the National Wildlife Federation which will facilitate the project within those states. Richard L. Weaver is the project leader.

❖

• Arrangements for a two months **expedition to the Galapagos Islands** to collect data and fish specimens relative to the problems of poisonous fishes, shark attacks, and other noxious marine animals have been made by Douglas Oil Company of California, President Woodrow Krieger, sponsor, and Dr. Bruce Halstead and associates at the Loma Linda (Calif.) School of Tropical and Preventative Medicine. Activities will be under the direction of Dr. Halstead, who already has conducted similar investigations in the Marianas, Phoenix, Line and other island groups in the Pacific. The over-all investigations are being sponsored by research grants from the U. S. Public Health Service and the Office of Naval Research. Assisting Dr. Halstead will be Jeanne Bunker, Norman Bunker, and Leonard Kuninobu, all of the Loma Linda School of Tropical and Preventative Medicine and Don Ollis, nationally known professional photographer. The expedition later will proceed along the coasts of northern Chile, Peru, Ecuador, Panama and other Central American areas.

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• On October 27, 1952, the **Instituto Mexicano de Recursos Naturales Renovables** (Mexican Institute of Renewable Natural Resources) was incorporated in Mexico City. This Institute, sponsored by leading Mexican conservationists, and the Charles Lathrop Pack Forestry Foundation, of Washington, D. C. will serve as a coordinating agency for resource activities in Mexico, and its functions will include the study of conservation problems, and the direction of campaigns of information and education for rational resource management. The Board of Trustees is made up of Eduardo Villasenor, President; Edmundo J. Phelan and Carlos Trouyet, Vice-Presidents; Gonzalo Robles, Alfredo Medina, B. Lagos and Professor Enrique Beltran, Secretary of the Board, who has been named Director of the Institute.

Funds for organizing the Institute will be derived from an initial grant of $100,000 made by the Charles Lathrop Pack Forestry Foundation, provided an equal amount can be raised in Mexico. The work of the Institute will in no sense be

competitive with that now being carried on by Mexican Government agencies, the United Nations and USA Point IV programs; the hope is, rather, that the Institute may serve to reinforce conservation efforts already under way, through its functions of correlation and integration, and especially through its educational activities.

❖

• Federal agencies having **grants and contracts for scientific research and development** at nonprofit institutions made available for such programs a total of $297 million in the fiscal year 1951 and $341 million in fiscal year 1952, according to a preliminary analysis of information compiled by the National Science Foundation with the cooperation of some eighteen agencies. Funds administered by the Department of Defense made up over 50% of the total each year, compared with about 35% for the Atomic Energy Commission, almost 6% for the Federal Security Agency, and slightly less than 5% for the Department of Agriculture. The remaining agencies accounted for less than 3% of the total. In 1951 funds reported for all agencies totaled $220 million in the physical, mathematical and engineering sciences, $66 million for biological, medical and agricultural sciences, and $11 million for social sciences. In 1952 comparable figures were $225 million, $70 million and almost $17 million, respectively. Figures also indicate that there has been an increase (20%) in Federal funds at nonprofit institutions for applied research and development and a slight decrease for basic research.

❖

• **Dr. S. K. Kon,** of the National Institute for Research in Dairying in Great Britain will visit in this country for four months, beginning in February, 1953. His present itinerary includes Washington, New York City, Ithaca, Ottawa, South Bend and Terre Haute, Peoria and Urbana, Madison, Rochester, Minn., Berkeley, Albany, Los Angeles, La Jolla, College Station, Texas, Stillwater, Oklahoma, St. Louis, Mo. Anyone interested in having Dr. Kon visit or lecture at their institution should contact the Agricultural Attache, British Embassy, 3100 Massachusetts Ave., Washington, D. C.

❖

• An organization of interest to biologists is the **Biological Photographic Association** which was founded at Yale University in September 1931. The purpose of the Association is "to further the study and application of photography in relation to the biological sciences and to improve its techniques." Membership today is in excess of 1000. A quarterly journal is published and an annual Salon conducted. C. Graham Eddy is *President* of the Association and the *Administrative Secretary* is Miss Jane H. Waters, Pavelle Color Incorporated, 533 West 57th Street, New York 19, N. Y.

❖

• The 37th **Annual Meeting of the Federation of American Societies for Experimental Biology** will be held in Chicago, Illinois, April 6-10, 1953. The six Societies comprising the Federation, which will meet together, are: The American Physiological Society, The American Society of Biological Chemists, The American Society for Pharmacology and Experimental Therapeutics, The American Society for Experimental Pathology, The American Institute of Nutrition and The American Association of Immunologists. The program will consist of one general session, a motion picture session, a number of symposia and approximately 600 scientific papers. There will be institutional and industrial exhibits and the Federation Placement Service will have facilities for interviews between candidates and employers.

Requests for hotel reservations and for further information should be addressed to the Federation Secretary, 2101 Constitution Avenue, Washington 25, D. C.

❖

• A roster of physiologists from abroad who are expected to attend the **19th International Physiological Congress** at Montreal, Canada in the late summer of 1953, has been prepared. Institutions interested in securing lecturers from among these visitors and that have funds available for this purpose are invited to write to Dr. E. M. Landis, President of the American Physiological Society, Harvard Medical School, 25 Shattuck Street, Boston 15, Mass., for further information.

❖

• **The Seventh International Congress of Radiology** will be held in Copenhagen, Denmark, from July 19-25, 1953. The Honorary President of the Congress is Professor Niels Bohr, the President is Professor P. Flemming Møller and the Secretary-General is Professor Flemming Nørgaard. It is expected that His Majesty, King Frederik IX, will open the Congress on Sunday afternoon, July 19. The scientific meetings of the Congress will take place in the new University buildings in Nørre Alle. The Scientific and Technical Exhibitions will be held in Denmark's largest Exhibition Hall which has an area of 50,000 square feet. The scientific program will consist of general meetings and section symposia. Papers may be given in one of the five sections into which the scientific program is divided: radiodiagnosis, radiotherapy, radiation biology, radiation physics, and X-ray technology. Plans have been made for visits by members and their associates to places of beauty and historical interest in and around Copenhagen, both by land and sea. Provided sufficient interest is shown, tours will be organized for the period immediately following the Congress. Tours which are definitely scheduled are of Denmark, of Seeland, and of Copenhagen-Esbjerg. If enough requests are received, arrangements will be made for a tour of Scandinavia. All correspondence about the Congress should be addressed to: The Seventh International Congress of Radiology, Øster Voldgade 10, Copenhagen K, Denmark.

❖

• The **Eighth International Botanical Congress** will be held in Paris in July, 1954. It is thought that the Congress will be of 10-12 days duration at the beginning or near the middle of July. Immediately preceding the Congress, it is contemplated that special meetings will be held covering some of the general areas which cut across the more specific interests of the Sections. A number of these early generalized meetings are expected to center about such topics as plant nomenclature, biosynthesis of proteins, plant biotics, tissue culture, etc. During the Congress, the symposium type of meeting will receive a prominent place. Some meetings will be devoted to miscellaneous reports presented by the members of the Congress. Sufficient time will be available for informal meetings and for all kinds of entertainment which in Paris, our French correspondent suggests, should be extremely interesting! Before and after the Congress the choice of a variety of excursions in all parts of France and the French Union will be offered. There will be specialized excursions for different groups including the paleobotanists, algologists, foresters, ecologists, taxonomists, and others. Excursions to Morocco, Algeria, and Tunisia are planned to take place in June. The largest number of excursions after the Congress will

finish together in Nice. In the "Côte d'Azur" the so-called "Post Congress" will be held which will deal with the botany of the Mediterranean region. A last group of excursions will be organized in tropical French Africa (Senegal, Sudan, Guinea and to the rain forest and equatorial mountains of Ivory Coast). The President of the Congress will be Professor Roger Heim, Director of the Museum National d'Histoire Naturelle. The General Secretary will be Professor P. Chouard of the Conservatoire National des Arts et Métiers. All applications to the Congress should be sent to: The General Secretary, VIIIth International Botanical Congress, Conservatoire National des Arts et Métiers, 292, Rue St. Martin, Paris (3°), France.

❖

• The conference at Utrecht, Netherlands, August 27-29, 1952, on **"The Biochemical and Strustural Basis of Morphogenesis"** has been reported by James D. Ebert, Department of Zoology, Indiana University, one of the participants.

This symposium was arranged by the International Institute of Embryology, an affiliate of the International Union of Biological Sciences, as one of the features associated with the triennial General Assembly of the Institute. Through the efforts of the Committee on Developmental Biology of the National Research Council, whose Chairman (Paul Weiss) is Vice-President of the International Institute of Embryology, and the generosity of the Rockefeller Foundation, as well as contributions from IUBS, it was possible for eight scientists from the United States to participate in this conference.

In his remarks opening the symposium, M. W. Woerdman, President of the IIE, expressed the hope that the meeting might be a symposium in the true sense of the word—a free interchange of ideas—and not merely a recitation of facts or a collection of essays, however polished. That the speakers attained the desired goal was demonstrated clearly by the spirited, critical and pertinent discussions.

Following the opening paper on "Biochemistry of Oogenesis" by J. Clavert, an account of "Biochemical and Structural Changes at Fertilization" was presented by A. Monroy. The next topics, "Biochemistry and Metabolism of Cleavage" and "The Energetic Relationships during Embryonic Development," were introduced by E. Zeuthen and P. H. Tuft, respectively. A consideration of "Metabolism and Determination" was presented by T. Hultin. S. Ranzi's paper dealt with "Proteins, Protoplasmic Structure, and Determination."

The latter part of the symposium was involved with the problem of time and manner of origin of specific proteins during development, with particular reference to the development of function. Three introductory papers were presented: "The Formation of Enzymes during Embryogenesis," by G. ten Cate; "Biochemical Development during Organogenesis," by H. Herrmann; and "Serological Methods in the Study of Morphogenesis," by M. W. Woerdeman. In all of these papers, and in the subsequent discussion periods, the need for approaching the problem of the role of specific proteins in development at a level more critical than that of chemical description was stressed.

On the last day of the conference, Paul Weiss, on invitation of the program committee, gave a synopsis of the major conclusions, outlined the general trends in the field and pointed out some profitable lines for future research.

In addition to those who presented introductory papers, fourteen invited discussants, active investigators in different fields, participated: E. J. Boell, L. H. Bretschneider, W. L. Doyle, J. D. Ebert, H. Holter, S. Hörstadius, F. E. Lehmann, A. E. Mirsky, J. Pasteels, J. Runnström, A. Stefanelli, V. C. Twitty, P. Weiss, and B. H. Willier. The group also profited from the remarks of several others in attendance, including H. V. Brondsted, A. Dalcq, and Chr. P. Raven. Nine countries were represented at the symposium.

The proceedings of the symposium, including not only the formal papers but the remarks as well, are being edited by Professor P. Raven and are to appear shortly in the *Proceedings of the Royal Academy* (Netherlands).

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• **The Gatlinburg Conference on Photosynthesis.** About 80 research workers in disciplines from theoretical physics to experimental enzymology gathered at Gatlinburg, Tennessee on October 29—November 1 for a free discussion of photosynthesis. The conference was supported by the National Science Foundation, the Office of Naval Research, and the Atomic Energy Commission to afford an analysis of the present state of the subject and to encourage research on the several major gaps in our knowledge of photosynthesis.

Leading topics were introduced by a speaker at each of six half-day sessions. These were: (1) Molecular structure of chlorophyll type pigments and the spectra of chlorophyll (J. R. Platt, Department of Physics, University of Chicago), (2) Fluorescence of chlorophyll in its bearing on photosynthesis (E. C. Wassink, Plant Physiology Laboratory, Wageningen, Holland), (3) The efficiency of photosynthesis (F. S. Brackett, National Institute of Arthritic and Metabolic Diseases, National Institutes of Health), (4) Oxygen evolution by isolated plastids (R. Hill, Biochemical Laboratory, Cambridge University), (5) The path of carbon during its photosynthetic assimilation (M. Calvin, Department of Chemistry, University of California), and (6) Characteristics of the biochemical reducing pool (H. Gaffron, Department of Chemistry, University of Chicago). In addition there was a night session devoted to the question of energy transport from one pigment to another within the plastid (with M. Kasha, Department of Chemistry, Florida State University and H. Kallman, Department of Physics, New York University, leading the discussion). Possibilities for mass culture of algae were also discussed. (H. Tamiya, Tokugawa Institute for Biological Research, Tokyo, B. Kok, Waweningen, Holland, J. E. Myers, Department of Zoology, University of Texas and others).

In the field of the known, a rather thorough understanding has now been reached of the course of carbon dioxide assimilation *except for the initial step* (M. Calvin, J. Bassham, and A. Benson, Department of Chemistry, University of California). This also is the case for energy transfer between the several chlorophylls and carotenoids in grana of various organisms (L. M. N. Duysens, Biophysical Group, Utrecht University, C. S. French, Carnegie Institution, Stanford). The model has been set for plastids carrying out the "Hill reaction" to be coupled reductively to a large variety of DPN and TPN-linked systems (W. Vishniac, Department of Microbiology, Yale University).

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• The **19th International Physiological Congress** will be held in Montreal, Canada, from August 31 to September 4, 1953. The scientific program will be divided into two parts: seven symposium sessions, on subjects to be selected, will be held at the Université de Montréal; concurrently with these, individual communications will be presented at McGill University and will be read in approximately ten sections meeting simultaneously. No scientific sessions will be held on the afternoon of September 3. It is expected that excursions to nearby points of interest will be arranged for that afternoon and that a banquet will be held in the evening. It is intended that the scope of the program will include the general fields of physiology, biochemistry, pharmacology and disciplines closely allied to these. Laboratory accommodations will be available for delegates who wish to present demonstrations. Special arrangements will be made for the showing of films

on teaching and research. Professor C. H. Best, of the University of Toronto, will serve as President of the Congress. Dr. F. C. MacIntosh, of McGill University, is Chairman of the Local Organizing Committee. All correspondence relative to the Congress should be addressed to: Miss Eileen O'Brien, Executive Secretary, Local Organizing Committee, 19th International Physiological Congress, McGill University, Montreal, Canada.

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• The ninth annual **Conference on Protein Metabolism** sponsored by the Bureau of Biological Research at Rutgers, the State University of New Jersey, will be held in New Brunswick, N. J. on January 30-31, 1953. General subject of the Conference will be "Conjugated Proteins." Reports will be given on hemoglobin, cytochromes, nucleoproteins, viruses, lipoproteins, and mucoproteins by Sam Granick, Walter W. Wainio, Erwin Chargaff, Seymour S. Cohen, J. L. Oncley and Karl Meyer respectively. The Conference will be open to all registrants. Reservation blanks may be obtained from Dr. William H. Cole, Rutgers University, New Brunswick, N. J.

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• During the recent **joint meeting** of the **Society of American Foresters** and the **Canadian Institute of Forestry**, held in Montreal, Canada, three awards were made. On behalf of the SAF, President George L. Drake presented two awards for distinguished service to forestry. The Gifford Pinchot medal was awarded to Raphael Zon of St. Paul, Minn., former editor of the *Journal of Forestry* and the retired director of the Lake States Forest Experiment Station. The Sir William Schlich memorial medal was awarded posthumously to the late Ellwood Wilson of Knowlton, Quebec, "the father of aerial forest mapping." Mr. Wilson died in May 1952. The medal was accepted by his son, Richard Ellwood Wilson of Saratoga, N. Y., a professional forester. A third award, a plaque presented annually by the Canadian Forestry Association for outstanding performance in forest conservation, was made to Henri Kieffer, chief of the Forest Protection Service of the Quebec Department of Lands and Forests. More than 800 foresters, their families and guests attended the convention. It was the largest international conference of professional foresters ever held in North America.

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• A sample of the **remarkable models prepared by Emil Haas** in his workshop at the Austrian College for Vine and Fruit Culture has been received in the AIBS office. The specimen is a model of a pear which is absolutely true to nature in size, shape, color, and other details. Models of diseased fruits, showing typical visible symptoms are also available. In the preparation of the models, two specimens of a real fruit are carefully selected by an expert, one to show typical shape (shape pattern) and the other to show typical color (color pattern). It is possible for the manufacturer to produce models of fruits on request as well as to supply specimens from his own collection. In addition to fruits, models of mushrooms and field produce are prepared for use as teaching aids and for display purposes. The address of the manufacturer is: Emil Haas, Wierner Strasse 74, Vienna-Klosterneuburg, Austria.

• The Braun-Blanquet, Fuller, Conard **"Plant Sociology,"** formerly published by McGraw-Hill Book Company, has been out of print for some time. Dr. Conard has now purchased the plates from McGraw-Hill and printed a limited edition, complete as formerly issued. The book is available, bound in dark green cloth, for $5.00 plus postage (former price $6.00), from Henry S. Conard, 1014 Park Street, Grinnell, Iowa.

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• In cooperation with the Rockefeller Foundation, the National Research Council is sponsoring exploration for the collection and storage of seed of **indigenous strains of maize** in Central and South America. Funds for the project were granted by the Technical Cooperation Administration of the Department of State. The project hopes to provide for the continuous improvement of food and feed corn production by the collection, storage, and regeneration of maize strains. Since 1943, the Rockefeller Foundation has supported such work in Mexico and an English edition of the report of this work was issued recently by the Bussey Institution of Harvard University. Before new Hybrid corns replace the older varieties the continuation and expansion of such a germ plasm bank to all the Americas will be the object of this present project. All native corn varieties will be listed and classified and the seed preserved, kept viable, and made available to plant breeders. The Committee in charge of this project is headed by Ralph E. Cleland, Indiana University and other members are: J. Allen Clark, Executive Secretary; Edgar Anderson, John O. Brew, William L. Brown, Hugh C. Cutler, C. O. Erlanson, Claud Horn, Paul C. Mangelsdorf, L. J. Stadler, G. H. Stringfield, and Paul A. Weatherwax. Scientists have been appointed in each of the Central and South American countries to coordinate and organize work in their area. Four storage centers have been arranged for in Mexico, Colombia, Brazil and Glenn Dale, Maryland respectively. Lists of the collections will be published as soon as they are completed.

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• Information received in the AIBS Office indicates that inquiries relative to the **14th International Congress of Zoology** to be held in Copenhagen from August 5-12, 1953, should be sent to: Professor Fage, Institut Oceanographique, 195 St. Jacques, Paris V, France.

From the SOCIETIES

• The annual meeting of the **Society of General Physiologists** was held in conjunction with the AIBS meetings at Cornell University on September 8-10, 1952. The title of the symposium was "Contributions of Comparative Physiology to General Physiology." Abstracts of the papers and minutes of the business meeting will be published in the April issue of the Journal of the National Cancer Institute. Each member will receive a reprint of the abstracts. Copies of the newly amended Constitution of the Society have recently been distributed to members. It is of interest that the Society also sponsored a regional meeting in conjunction with Sections F, G and N of the AAAS on "Survival of Normal and Neoplastic Tissues After Freezing." This was arranged by Dr. B. J. Luyet.

• The **American Society of Parasitologists** is planning a joint session with the Biometricians during the 1953 AIBS meetings at Madison, Wisc. As time and space for papers will be limited, members of the ASP wishing to present papers of a statistical nature before the joint group should contact the Secretary, A. C. Walton, early this spring, in order to permit the setting up of a balanced sectional meeting.

• The **American Phytopathological Society** is now preparing a "Directory" of members. Previously, at irregular intervals, a simple list of Members was distributed. The new Directory will have an alphabetical list of members, giving their titles, addresses and fields of interest. There will also be a geographical list of members by states, foreign countries, and larger institutions. The Constitution will be included. The Directory will be issued as Part II of a regular issue of *Phytopathology*. A questionnaire with stamped post card returnable to the Secretary's office was mailed early in December. The deadline for return of these cards, by all members in good standing, is February 1, 1953.

• The **American Bryological Society** is perfecting plans for reprinting exhausted issues of *The Bryologist* and will soon have complete sets available of the 55 volumes of this journal, which was founded in 1898 by the late Dr. A. J. Grout. Dr. Lewis E. Anderson of Duke University is in charge of the files of back volumes, and also of the reprinting project.

• **Sigma Delta Epsilon,** graduate women's scientific fraternity, held its annual meeting at Cornell University in September. At that time five outstanding women scientists were presented with certificates. The recipients of these awards were: Drs. Emma Perry Carr, Alice Catherine Evans, Sophie Satina, Ella Woods, Maud Slye and Mrs. Ruby Green Smith.

• At its meeting in Ithaca, N. Y., the Ecological Society of America presented the **George Mercer Award** for "an outstanding paper in the field of ecology, published during the years 1950-51" to Dr. Robert B. Platt, of the Department of Biology, Emory University.

• The American Society for Horticultural Science is publishing a **Cumulative Index** of the first 58 volumes of the *Proceedings*. Those who desire copies should place orders with the W. F. Humphrey Press, Geneva, New York. The price is $4.00 plus postage. The index has been carefully prepared and should be a valuable addition to the *Proceedings*.

• The **American Society for Horticultural Science** will hold its **50th meeting** at the University of Wisconsin in September, 1953. A special program is planned for the occasion.

• At the annual meetings of the **American Society for Horticultural Science, five awards** are announced and presented in recognition of outstanding papers published in the *Proceedings* and representing the various divisions of horticulture. At the annual meeting at Cornell, the following recipients of awards were announced:

JOSEPH H. GOURLEY—Pomology: Leon Havis and Anna L. Gilkeson, Plant Industry Station, Beltsville, Md., for "Interrelationships of Nitrogen and Potassium Fertilization and Pruning Practice in Mature Peach Trees," Proc. Amer. Soc. Hort. Sci., *57:* 24-30.

CHARLES G. WOODBURY—Raw Products Research: George B. Reynard, Campbell Soup Co., Riverton, N. J., for "Inherited Resistance to Radial Cracks in Tomato Fruits," Proc. Amer. Soc. Hort. Sci., *58:* 231-244.

LEONARD H. VAUGHAN—Vegetable Crops: H. Kihara, Kyoto University, Kyoto, Japan, for "Triploid Watermelons," Proc. Amer. Soc. Hort. Sci., *58:* 217-230.

—Floriculture and Ornamental Horticulture: C. W. Fisher, Jr., 1522 Pacific Ave., Atlantic City, N. J., and J. R. Keller, for "The Prevention of Decay of Horticultural Products by the Use of Brominated Activated Charcoal," Proc. Amer. Soc. Hort. Sci., *57:* 432-438.

• At the annual meeting of the **American Society for Horticultural Science** held September 8-10, 1952, at Cornell University, an **annual award for the best student paper** published in the field of Floriculture and Ornamental Horticulture in the *Proceedings* of the Society was announced. The award is to be known as the Alex Laurie Award in Floriculture and Ornamental Horticulture and amounts to $100.00 annually for a period of ten years. The donor of the award is the Ohio State University Floriculture Alumni Association. The first award will be based on papers appearing in the 1952 volumes of the *Proceedings*.

• The national officers of the **Beta Beta Beta Biological Society** are: *President,* Lloyd M. Bertholf, College of the Pacific, Stockton, California; *Secretary,* Frank G. Brooks, Cornell College, Mount Vernon, Iowa.

• The *President* of the **Phi Sigma Society,** national biological society, is Harley J. Van Cleave, Department of Zoology, University of Illinois; the *Secretary* is Henry Van Der Schalie, Museum of Zoology, University of Michigan.

• Officers of **Alpha Epsilon Delta,** national premedical honor society, are: *President,* Hugh E. Setterfield, Ohio State University; *Secretary-Historian,* Maurice L. Moore, 7 Brookside Circle, Bronxville 8, N. Y.

• American Association of Anatomists:

President: Leslie B. Arey.
Vice-Presidents: Samuel R. Detwiler and William Bloom.
Secretary-Treasurer: Normand L. Hoerr, School of Medicine, Western Reserve University, 2109 Adelbert Road, Cleveland 6, Ohio.

• American Bryological Society.

President: Geneva Sayre.
Vice-President: Gilford J. Ikenberry.
Secretary: Winona H. Welch, DePauw University, Greencastle, Indiana.

• American Physiological Society.

President: E. M. Landis.
President-Elect: E. F. Adolph.
Past President: R. W. Gerard.
Secretary: Milton O. Lee, 2101 Constitution Avenue, Washington, D. C.

• American Phytopathological Society.

President: J. G. Dickson.
Vice-President: J. H. Jensen.
Treasurer: Saul Rich.
Secretary: S. E. A. McCallan, Boyce Thompson Institute, Yonkers, N. Y.

• American Society for Horticultural Science.

President: S. H. Yarnell.
Vice-President: F. P. Cullinan.
Secretary-Treasurer: Freeman S. Howlett, Ohio State University, Columbus, Ohio.

• American Society of Human Genetics.

President: C. P. Oliver.
Vice-President: James V. Neel.
Treasurer: C. Nash Herndon.
Secretary: Sheldon C. Reed, University of Minnesota, Minneapolis 14, Minnesota.

• American Society of Ichthyologists and Herpetologists.
President: Charles M. Bogert.
Treasurer: Coleman J. Goin.
Secretary: Arnold B. Grobman, Department of Biology, University of Florida, Gainesville, Florida.

• American Society of Limnology and Oceanography.
President: Frederick E. J. Fry.
Secretary: Bostwick H. Ketchum, Woods Hole Oceanographic Institute, Woods Hole, Massachusetts.

• American Society of Mammologists.
President: William J. Hamilton, Jr.
Vice-Presidents: William H. Burt and William B. Davis.
Treasurer: Viola S. Schantz.
Recording Secretary: Randolph L. Peterson, Royal Ontario Museum of Zoology, Toronto, Ontario, Canada.

• American Society of Naturalists.
President: L. J. Stadler.
Vice-President: Alexander Hollaender.
Secretary: Warren P. Spencer, Wooster College, Wooster, Ohio.

• American Society of Parasitologists.
President: Cornelius B. Philip.
President-Elect: Elery R. Becker.
Vice-President: Harold W. Brown.
Treasurer: Robert M. Stabler.
Secretary: Arthur C. Walton, Knox College, Galesburg, Illinois.

• American Society of Plant Physiologists.
President: D. I. Arnon.
Vice-President: Folke Skoog.
Executive Secretary: J. Fisher Stanfield.
Secretary: A. S. Crafts, Department of Botany, University of California, Davis, California.

• American Society of Plant Physiologists—Western Section.
Chairman: Moyer D. Thomas.
Vice-Chairman: Harlan K. Pratt.
Secretary-Treasurer: D. J. Wort.

• American Society of Zoologists.
President: E. Newton Harvey.
Vice-President: Libbie H. Hyman.
Treasurer: Harry A. Charipper.
Secretary: S. Meryl Rose, Department of Zoology, University of Illinois, Champaign, Illinois.

• Botanical Society of America.
President: Ralph H. Wetmore.
Vice-President: Truman G. Yuncker.
Treasurer: Harry J. Fuller, Department of Botany, 301 Natural History Dept., University of Illinois, Urbana, Illinois.

• The Ecological Society of America.
President: Lee R. Dice.
Vice-President: Stanley A. Cain.
Treasurer: Frederick H. Test.
Secretary: Murray F. Buell, Rutgers University, New Brunswick, New Jersey.

• Genetics Society of America.
President: Roy E. Clausen.
Vice-President: W. Ralph Singleton.
Treasurer: Ernst Caspari.
Secretary: Clarence P. Oliver, Department of Zoology, University of Texas, Austin 12, Texas.

• Mycological Society of America.
President: Charles Thom.
Vice-President: William W. Diehl.
Secretary-Treasurer: Leland Shanor, University of Illinois, Urbana, Illinois.

• Poultry Science Association.
President: H. J. Sloan.
Vice-Presidents: J. R. Cavers and O. E. Goff.
Secretary-Treasurer: T. B. Avery, Poultry Department, Kansas State College, Manhattan, Kansas.

• Society for the Study of Development and Growth.
President: E. J. Boell.
Treasurer: L. G. Nickell.
Secretary: Richard H. Goodwin, Department of Botany, Connecticut College, New London, Connecticut.

• Society for the Study of Evolution.
President: Alfred S. Romer.
Vice-Presidents: Adriano Buzatti-Traverso, William M. Hiesey and Carl L. Hubbs.
Treasurer: Charles M. Bogert.
Secretary: Harlan Lewis, Division of Botany, University of California, Los Angeles 24, California.

• Society of American Foresters.
President: George L. Drake.
Vice-President: E. L. Demmon.
Executive-Secretary: Henry E. Clepper, Society of American Foresters, Mills Building, Washington 6, D. C.

• Society of General Physiologists.
President: H. Burr Steinbach.
Vice-President: Arthur K. Parpart.
Secretary-Treasurer: William R. Duryee, Carnegie Institution of Washington, 5241 Broad Branch Road, Washington 15, D. C.

• Society of Protozoologists.
President: Theodore L. Jahn.
Vice-President: Lowell E. Noland.
Secretary: Norman D. Levine, University of Illinois, Urbana, Illinois.

• New Officers of the Nature Conservancy elected at the annual meeting September 8 at Ithaca, New York, are Richard H. Pough, American Museum of Natural History, President, and S. Charles Kendeigh, University of Illinois, Vice President. George B. Fell, Washington, D. C., and Joseph J. Hickey, University of Wisconsin, continue in office as Secretary and Treasurer.

A report of the Nature Conservancy's activities during the last two years is available on request addressed to the Nature Conservancy, 1840 Mintwood Place N. W., Washington 9, D. C. "Nature Sanctuaries in the United States and Canada" is also available for 50¢ a copy.

• Society for Industrial Microbiology.
President: Kenneth B. Raper.
Vice-President: M. M. Baldwin.
Secretary-Treasurer: C. L. Porter, Department of Biological Sciences, Purdue University, Lafayette, Indiana.

MALACOLOGIST

The Secretary of the South African Embassy, 3101 Massachusetts Avenue, Washington 8, D. C. announces a vacancy in the Department of Health at Johannesburg for a trained malacologist to undertake bilharzia control research. Salary £1000-1150 plus cost of living and transportation to Africa. Applications must be filed by January 31st with the Secretary.

The A·I·B·Scope

• At a meeting in Ithaca, on September 8, the Governing Board approved AIBS participation in the organization of the proposed **Scientific Manpower Commission** (*AIBS Bulletin*, Vol. II, No. 5, pp. 23-24, 1952). The Chairman appointed F. P. Cullinan and S. L. Meyer as the representatives of AIBS authorized to take part in the establishment of the Commission. Representatives of the various participating organizations met in Washington on October 23. The gathering was converted from a meeting of representatives to a meeting of incorporators with Howard A. Meyerhoff designated as Chairman. After discussing the structure, organization, and financial support of the Commission, it was agreed that the next step should be to request the participating organizations to nominate two or more members to serve on the Commission. When the list of nominees has been obtained from all participating organizations, the incorporators will elect two members from each organization as members of the Scientific Manpower Commission and the formation of the Commission will then be completed. The Governing Board of the AIBS has named F. P. Cullinan and J. S. Nicholas as the two nominees for membership. A meeting of the incorporators for the purpose of electing members of the Commission will be held in Washington on January 7, 1953.

• **New Members of the AIBS Governing Board** have been named by two Member Societies. They are: John N. Couch, University of North Carolina, representing the Mycological Society of America, and Clay G. Huff, Naval Medical Research Institute, National Naval Medical Center, representing the American Society of Naturalists.

• **The AIBS Advisory Committee on Biochemistry** to the Office of Naval Research met November 24th at Alta, Utah. Under the chairmanship of Dr. Cornelis van Niel the Committee evaluated eleven new proposals and ten renewal proposals on the basis of their scientific merit.

• **The AIBS Committee on the Handbook of Biological Data** met at the NAS-NRC Building, Washington, on November 26, 1952, with T. C. Byerly, Chairman of the Committee, presiding. Others present were: E. C. Albritton; John C. Bugher; N. H. Fell; David R. Goddard; Charles M. Goss; F. H. Hall; J. W. Heim; Paul E. Howe; F. J. Knoblaugh; Milton O. Lee; S. L. Meyer; Orr E. Reynolds; W. S. Specter; Raymund L. Zwemer. Members of the professional staff of the Handbook were introduced to the Committee. The Chairman made a brief report and commented on the recent publication in book form of *Standard Values in Blood* by the W. B. Saunders Company. Dr. Albritton, Executive Secretary of the Committee and Editor of the Handbook, reported on the progress of other fascicles. Fascicle II, "Nutrition and Metabolism," and Fascicle III, "Growth and Reproduction," are practically completed. It is expected that Fascicle IV, "Performances (Plant and Animal Physiology)," will be finished by June 30, 1953. The Committee agreed that top priority should be given next to the fascicles on "Mathematical and Statistical Tables" and "Biochemical Composition." The professional staff was instructed to begin the selection of key materials from the various fascicles for inclusion in the Handbook when it is brought together in its final form.

• **The Membership Committee of the AIBS** met at the Washington office on November 20, 1952. The following members of the Committee were present: Freeman S. Howlett, *Chairman;* William A. Dayton; Ralph W. Gerard; James G. Horsfall. Marston Bates was absent due to the pressure of other duties. Others in attendance were: T. C. Byerly; F. P. Cullinan; Ruth E. Rue and S. L. Meyer.

Many of the problems which are of concern to the Membership Committee are those which interest the officers and members of the Governing Board of the AIBS. A number of such problems were considered by the Committee and definite action was recommended. It was pointed out, for example, that AIBS has "service" functions and "statesmanship" functions and that sometimes the latter are over-shadowed by proximity to the former. This interesting question was raised: How do biologists "speak" if not through AIBS? It was pointed out that two responsibilities of the AIBS are: (1) to create a loyalty by *biologists* to *biology;* and (2) to "sell" biology to biologists, to students, and to the public. It was agreed that at the present time no intensive "membership campaign" was necessary or desirable. It was felt that the best way to "sell" the AIBS is through the development of an effective program which will, on its own merit, win the support of all biologists.

• **The Publications Committee of the AIBS** met in Washington on November 13, 1952. The following members of the Committee were present: W. C. Singleton, *Chairman;* John Behnke; Ralph R. Shaw; Frank B. Rogers; Milton Lee; A. J. Riker; A. E. Dimond; Ronald Bamford; William R. Duryee. Edward R. Raney was absent due to illness. Others in attendance were: T. C. Byerly; Ileen E. Stewart and S. L. Meyer.

The agenda included discussion of the following topics: coordination of abstracting services; cost of publication of biological journals; and dissemination of biological information. A subcommittee composed of Milton O. Lee, *Chairman,* Ronald Bamford, A. E. Dimond, and A. J. Riker is making an intensive study of cooperative business services for biological journals. A definite proposal will be presented by this group at the next meeting of the Committee on April 2, 1953.

• Milton O. Lee, Managing Editor of the *Federation Proceedings,* has been named a member of the **Committee on the Handbook of Biological Data.** F. J. Knoblauch has been appointed a liaison representative of the Office of the Surgeon General, Department of the Army; Orr E. Reynolds as a liaison representative of the Biological Sciences Division, Office of Naval Research; John C. Bugher, as a liaison representative of the Division of Biology and Medicine, Atomic Energy Commission.

• **New members of the AIBS Publications Committee** are: John Behnke, Assistant Administrative Secretary, AAAS; Ralph R. Shaw, Librarian, U. S. Department of Agriculture Library; Frank B. Rogers, Director, Armed Forces Medical Library.

• **Recently appointed members of the AIBS Associates Committee** are: Blanton Bruner, American Tobacco Company; Kenneth P. Raper, University of Wisconsin; and E. L. Sevringhaus, Hoffman La-Roche. Other members are E. G. Butler and Lawrence Saunders: J. C. Walker is Chairman.

• ***Standard Values in Blood,*** prepared under the direction of the AIBS Committee on the Handbook of Biological Data, has been printed in book form by the W. B. Saunders Company. It retails for $4.50 per copy.

This first fascicle of the Handbook presents in tabular form standard values in blood for man and other vertebrates. The values are arranged under the following sections: Physical

Properties: Coagulation Phenomena; Blood Groups; Erythrocytes and Hemoglobin; Leukocytes; Blood and Bone Marrow Cells; Water, Carbohydrates, Lipids, and Proteins; Amino Acids and Non-Protein Nitrogen Compounds; Phosphorus and Sulfur Compounds; Vitamins, Hormones, and Enzymes; Electrolytes; Minerals, Gases, and Acid Base Values; Effects of Radiation and Storage; Effective Blood Levels of Therapeutic Agents.

The tables in this unusually complete collection of data on blood are unique in the high degree of reliability sought for the data. Data have been supplied and authenticated by over six hundred leading investigators in biology and clinical medicine. The tables have been exhaustively reviewed, some by as many as twenty experts in the field.

The tables are also unique in their treatment of the well known phenomenon of biological variability. In addition to giving a single representative value for each item covered in a table, the tables present information on variability in a most easily comprehensible and directly usable form.

The quantitative data are supplemented with essential information on nomenclature, units, methods and conditions of measurement, investigated strains, and theories. An extensive bibliography containing the name of the contributor of each value.

The BIOLOGY LIBRARY

One copy of each publication submitted for listing should be sent to the Editor, The AIBS Bulletin, 2101 Constitution Avenue, Washington, D. C.

Advances in Agronomy. Volume IV. Edited by A. G. NORMAN. 416 pages, with figures and tables. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1952) $8.50.

The series on *Advances in Agronomy* is prepared under the auspices of the American Society of Agronomy. The nine articles, prepared by specialists in their respective fields, are on a variety of subjects: Grassland Agronomy in Australia; Type of Soil Colloid and the Mineral Nutrition of Plants; the Physiological Basis of Variation in Yield; Copper in Nutrition; Ecological and Physiological Factors in Compounding Forage Seed Mixtures; Soil Manganese in Relation to Plant Growth; Atomic Energy and the Plant Sciences; Vegetation Control on Industrial Lands; Soil and the Growth of Forests. A list of references is given with each article.

Audubon's Butterflies, Moths and Other Studies. Compiled and edited by ALICE FORD. 120 pages, illustrated. The Studio Publications, Inc., in association with Thomas Y. Crowell Company, 432 Fourth Avenue, New York 16, N. Y. (1952) $5.75.

The rediscovery of Audubon's remarkable, jewel-like original paintings of butterflies, moths and other insects, as well as small reptiles has provided the basis for the present work. These studies have never been reproduced before. Complementing the water colors, a selection of Audubon's immortal bird paintings of the same period and region are presented in color. Alice Ford has prepared a fascinating and authentic story of many forgotten episodes in the artist's life and of his meetings with other artist-scientists of his time. This account is further highlighted with a few selected works of these contemporaries.

The Chemistry and Physiology of the Nucleus. Edited by V. T. BOWEN. 402 pages. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1952). $7.00.

The subject matter of this volume was collected originally as a symposium on nuclear chemistry and biology sponsored by the Biology Department of the Brookhaven National Laboratory in August, 1951. The conference was organized to present various aspects of the growing but limited knowledge of the non-genetic properties and activities of nuclei. As far as possible, the discussions were recorded and included. This volume is distributed, as Supplement II to *Experimental Cell Research*, through the interest and cooperation of the officers of the International Society for Cell Biology.

Developmental Plant Anatomy. RICHARD A. POPHAM. 408 pages, 76 pages of illustrations, including 160 photomicrographs. Long's College Book Co., 1836 North High Street, Columbus 1, Ohio. (1952) $4.50.

A workbook that provides a dynamic approach to the study of plant anatomy, this volume was designed for use in a first or general course in plant structure. The materials selected to illustrate the basic principles of developmental plant anatomy are the best that have come to the author's attention. The organization of the book utilizes the sound pedagogical principles of proceeding from the known to the unknown and from the simple to the more complex. The 160 photomicrographs are supplied in the belief that the student can best use his time in making more observations and drawing inferences from them. Label lines are omitted to allow the student to exercise his own initiative.

Evolution in the Genus Drosophila. J. T. PATTERSON and W. S. STONE. 610 pages, 74 figures and 109 tables. The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. (1952) $8.50.

The authors, professors of Zoology at the University of Texas, present in this volume the pertinent details of evolution as it has been revealed in investigations on one of the most successful insect genera, the genus *Drosophila*. The result is a full analysis and synthesis of the many types of information on *Drosophila* which have been accumulated during the present century.

Experiments in General Biology. GRAHAM DUSHANE and DAVID REGNERY. 182 pages, illustrated. W. H. Freeman and Company, 549 Market Street, San Francisco 5, Calif. (1950) $2.00.

This manual resulted from the efforts of the authors to make laboratory work an integral part of the course in General Biology at Stanford University. Their approach to the subject is similar to that developed by Garrett Hardin in his *Biology—Its Human Implications*. Whenever possible, living organisms, including man, are used for observations and experiments. The students are encouraged to use the scientific method in their approach to problems.

Freezing and Drying. Edited by R. J. C. HARRIS. 206 pages. Hafner Publishing Company, 31 East 10th Street, New York 3, N. Y. (1952) $3.00.

This book consists of papers and discussions given at a symposium held in London, England at the Institute of Biology in June 1951. Presented are discussions of freezing and drying techniques and equipments in use commercially; survival and preservation of mammalian tissues after various types of freezing processes; the preservation of blood and endocrine tissues at low temperatures; and a comparison of freezing and drying with common fixation procedures. For those interested in histotechnique and product preservation this book should prove highly interesting.

Freshwater Fishery Biology. KARL F. LAGLER. 359 pages, illustrated. Wm. C. Brown Company, Dubuque, Iowa. (1952) $5.75.

To be used as a textbook or reference work in fishery biology, this book reflects the broad background of its author. Dr. Lagler, of the University of Michigan's School of Natural Resources, discusses not only the ecology, development and natural history but also the methods for fishery surveys, management and improvements. It is an extensively illustrated book that should be a valuable addition to the library of the fishery biologist, commercial fisherman or recreational angler.

A General Zoology of the Invertebrates. G. S. CARTER. 509 pages, 172 figures. The Macmillan Company, 60 Fifth Avenue, New York 11, N.Y. (1952) $5.75.

The author is Lecturer in Zoology at the University of Cambridge. The foreword is by Julian S. Huxley. This book has been written for students in their first or second year of college or university training. It deals with selected general zoological problems and is intended to be read along with the textbook in a course in descriptive zoology. The contents are divided into four major parts: Protoplasm and the Free-living Cell; The Multicellular Body; Comparative Physiology; Some General Problems of Invertebrate Zoology.

Guide to the Literature of the Zoological Sciences. ROGER C. SMITH. 133 pages. Burgess Publishing Company, 426 South Sixth Street, Minneapolis 15, Minn. (3rd edition, 1952) $2.50.

This revised outline of the literature phases of the work of specialists in the zoological sciences represents a continuing effort to bring together the latest and best information on the subject. It includes chapters on: Introduction and Literature Problems of the Scientist; The Mechanics of the Library and Book Classifications; Bibliographies of the Zoological Sciences; Abstract Journals; The Form of Bibliographies; The Forms of Literature; Preparation of a Scientific Paper; Taxonomic Indexes and Literature; Library Assignments. The present volume has been expanded and made increasingly useful to a wide range of biologists.

An Introduction to the Principles of Plant Physiology. WALTER STILES. 701 pages, 58 line illustrations. Methuen & Co. Ltd., 36 Essex St., London, W.C.2 (2nd edition, 1950) 60s.

Since the first edition of this book appeared in 1936, much important work has been carried out on basic problems of plant physiology. In order to deal adequately with these recent developments, a number of sections of the book have been re-written, particularly those dealing with water and salt relations, enzyme action, respiration, photosynthesis, nitrogen metabolism, mineral nutrition and plant hormones. An extensive bibliography is provided for those who wish to consult original sources.

Laboratory Guide for Zoology. ALFRED M. ELLIOTT. 250 pages, illustrated. Burgess Publishing Company, 426 South Sixth Street, Minneapolis, Minn. (2nd edition, 1952) $3.00.

This is a revision of the author's laboratory manual, formerly known as a *Laboratory Guide for Animal Biology*. It includes new material which, with the old, is closely correlated with his textbook, *Zoology*. The contents are divided into five parts; Zoology as a Science; Life: Its Beginnings and Nature; The Rise of Animal Life; The Organ Systems of a Vertebrate—Frog; Continuity of Life. Evolution is the central principle of organization. Numerous original drawings provide graphic illustrations.

A Laboratory Manual for Elementary Plant Physiology. VICTOR A. GREULACH. 85 pages. Burgess Publishing Company, 426 South Sixth Street, Minneapolis 15, Minn. (1952) $2.25.

This loose leaf manual is suitable for a one-term, two-semester or two-quarter course in plant physiology. It should be particularly useful in agricultural and liberal arts colleges. The experiments which have been included are those which are suitable for the beginning student; can be performed with minimum amount of apparatus, glassware and chemicals; illustrate applications as well as fundamental principles; and, wherever possible, utilize living materials. The manual is designed so that student reports can be included in the manual itself and additional experiments may be added by the instructor.

Laboratory Manual for Introductory Mycology. CONSTANTINE J. ALEXOPOULOS and E. S. BENEKE. 177 pages, 17 plates with 95 figures. Burgess Publishing Company, 426 South Sixth Street, Minneapolis 15, Minn. (1952) $3.25.

This manual is intended for students who have successfully completed one year of biological sciences and who are, therefore, familiar with elementary laboratory techniques and important biological concepts. The contents are divided into two parts; Useful Methods for the Study of Fungi, and The Achlorophyllous Thallophytes. The latter serves as a guide to the study of selected representatives of the phyla Schizomycophyta, Myxomycophyta and Eumycophyta.

Lillie's Development of the Chick. Revised by HOWARD L. HAMILTON. 624 pages, 283 figures. Henry Holt and Company, 383 Madison Avenue, New York 17, N. Y. (3rd edition, 1952) $8.50.

This book is intended, as was the original edition, to introduce the student to the field of embryology. In addition, it is hoped that it may be used as a guide to further research by the advanced student. Though the content remains essentially descriptive, wherever possible reference is made to experimental work, in line with the modern emphasis on experimental embryology. Certain chapters have remained relatively unchanged; others have been more or less completely rewritten; one is new. A well-illustrated and condensed description of developmental stages has been prepared by Dr. Viktor Hamburger and the author and is included as a replacement for the older chronologies.

Manual of Phycology, An Introduction to the Algae and Their Biology. GILBERT M. SMITH, Editor. 375 pages, 47 figures. Chronica Botanica Company, Waltham, Mass. (1952) $7.50.

This 27th volume in the Chronica Botanica "New Series of Plant Science Books" is edited by Dr. G. M. Smith, dean of American phycologists. Each chapter is written by a well-known American or European botanist known for his or her work in the algae. The first chapter, on the history of phycology, is written by G. W. Prescott, and Dr. Smith contributes the following chapter on the classification of the algae. Space does not permit mention of all the other fifteen chapters and two appendices, but among them are discussions of the Chlorophyta by Prof. Iyengar of the University of Madras, the Chrysophyta by Prof. Fritsch of the University of London, the Phaeophyta by G. F. Papenfuss of the University of California, the Rhodophyta by Kathleen M. Drew of the University of Manchester. Special aspects of phycology are covered in such chapters as "Fossil Algae," "Cytology of the Algae," "Sexuality of the Algae" by G. M. Smith, "Physiology and Biochemistry of the Algae" by L. R. Blinks of the Hopkins Marine Station, and "Ecology of the Fresh Water Algae" by L. H. Tiffany.

Medical Mycology: An Introduction to its Problems. G. C. AINSWORTH. 103 pages, illustrated. Pitman Publishing Corporation, 2 West 45th Street, New York, N. Y. (1952) $2.75.

This is a general review of mycology that will be of interest to both microbiologists and the medical profession. It is written in a style which is readily understandable also by the non-technical person who is interested in medical mycology. Generous use of illustrations and an extensive bibliography increase the usefulness and appeal of the book.

Metabolic Maps. WAYNE W. UMBREIT. 439 pages. Burgess Publishing Company, 426 South Sixth Street, Minneapolis 15, Minn. (1952) $6.00.

The author has applied the principles of cartography to biochemical reactions. By means of metabolic maps he has been able to summarize widely scattered and unrelated information and from such summaries discern relationships that would otherwise be obscure. Following a most unusual and interesting introduction to metabolic maps, their properties, uses, and limitations, chapters are devoted to the following subjects: The Pathway from Glucose to Pyruvate; The Phosphate System: Energy-rich Phosphate; The Citric Acid Cycle; The Reactions of Pyruvate; The Pathways to Oxygen; The Introduction of Nitrogen; The Metabolism of Aminoacids; Methyl and Other One-carbon Compounds; The Origin and Breakdown of Aromatic Rings; The Origin and Breakdown of Nucleic Acid, Purines, and Pyrimidines; The Lipides.

Methods of Statistical Analysis. CYRIL H. GOULDEN. 467 pages, 40 figures and 114 tables. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (2nd edition, 1952) $7.50.

Since the first edition of this book was published in 1939, many important advances have been made in statistics, necessitating a complete revision and the introduction of much new material in the present volume. It covers the general field of applied statistics and offers for the first time in one book: modern methods of computation for partial and multiple correlation, comprehensive treatments of the discriminant function, factorial experiments, incomplete block experiments, non-orthogonal data, probit analysis, and quality control.

The Molecular Architecture of Plant Cell Walls. R. D. PRESTON. 211 pages, illustrated. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1952) $6.75.

The author is Reader in Plant Biophysics at the University of Leeds. In the first few chapters, he presents a résumé of the more important physical and chemical approaches to cellulose structure. The remainder of the book is concerned with the detailed architecture of cell walls in a wide variety of plants, including growing cells, and an attempt is made to interpret growth processes in terms of the structure thus revealed.

Morphogenesis in Plants. C. W. WARDLAW. 176 pages, 42 figures. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1952) $2.25.

The author of this monograph is Professor of Cryptogamic Botany at the University of Manchester. After an introduction to this aspect of botanical science, he discusses such phases of the subject as embryology, the shoot apex and experiments on it, leaf formation and related problems, mathematical relationships, biochemistry and morphogenesis, genic control of morphogenesis and the evidence of genic action. Upon the background of such a survey, he briefly considers some of the general issues and conceptions which have emerged.

Possums. CARL G. HARTMAN. 174 pages, illustrated. University of Texas Press, Austin, Texas. (1952) $6.00.

This remarkable natural history book reveals the "private life" of the oppossum in a unique fashion. No aspect of its development, its habits, its folklore, its history have been omitted. The more than one hundred illustrations represent a veritable history of animal picturization from the earliest woodcuts to the copper halftones of today. The book provides the reader with a wealth of scientific information as well as a source of delightful entertainment.

Poultry Production. LESLIE E. CARD. 416 pages, 216 illustrations and 4 plates, 2 in color. Lea & Febiger, Washington Square, Philadelphia 6, Pa. (8th edition, 1952) $5.00.

The first four editions of this popular textbook were prepared by W. A. Lippincott; the next three by Lippincott and Card; the eighth edition has been revised by Professor Card. Important changes have been made in recognition of the rapid developments in poultry science. The section on endocrines and their functions has been expanded; poultry breeding and improvement are discussed in terms of the interaction of heredity and environment and the relation of this concept to selection methods; poultry housing has been developed as a problem in biology and engineering; the relation of the amino acids to poultry feeding has been added; the concept of marginal production and marginal revenue as factors in profitable poultry production has been included. In an introduction which he has entitled "A Personal Note to Students," Professor Card discusses the opportunities which are available to college graduates in poultry science.

Regeneration and Wound-healing. A. E. Needham. 152 pages. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1952) $1.75.

This little book is intended as an introduction to a general treatment of the subject of regeneration, the first in English since T. H. Morgan's *Regeneration*, published in 1901. As far as possible, the theoretically significant discoveries on wound-healing are also considered. The bibliography, with 553 listings, provides an excellent series of references to reviews and textbooks as well as to recent papers which give a key to the earlier literature rather than to original authors.

Respiration in Plants. WALTER STILES and WILLIAM LEACH. 172 pages, 10 figures. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (3rd edition, 1952) $2.25.

The authors present a discussion of plant respiration which is readable and understandable by the elementary student of botany and which, at the same time, contains sufficient information to render it of value to the advanced student. They have emphasized the principles of plant respiration rather than catalogued a mass of detailed observations. As a result of recent advances, the chapter on "The Mechanism of Respiration" has been largely rewritten while a number of important alterations and additions have been made throughout the book.

Seaweeds and Their Uses. V. J. CHAPMAN. 287 pages, illustrated. Pitman Publishing Corporation, 2 West 45th Street, New York, N. Y. (1949) $6.00.

The author has brought together in one volume the known information about seaweed uses in a manner which will interest the general reader and be of value to the specialist. The subject matter refers solely to the algae; the economic uses of the marine phanerogams has not been considered.

Soil Microbiology. SELMAN A. WAKSMAN. 356 pages, 130 figures and 77 tables. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1952) $6.00.

Life in the soil is the subject of this book. It deals with the numerous biological, physical and chemical processes which occur in the soil and in which microorganisms are involved. It stands between the earlier *Principles of Soil Microbiology* and *The Soil and the Microbe* by the same author, less detailed than the former and less elementary than the latter. As Dr. Waksman himself describes the book: "My intention was to present here a broad outline of the subject, one might even say a philosophy of soil microbiology."

Statistical Method in Biological Assay. D. J. FINNEY. 661 pages. Hafner Publishing Company, 31 East 10th Street, New York 3, N. Y. (1952) $11.00.

This book provides a comprehensive account of designs and statistical analyses for biological assays, both as a textbook for the student of statistics and as a reference for the practitioner of bioassay. The author assumes in his readers a reasonable familiarity with the basic statistical techniques used in scientific research. However, all matters peculiar to the statistics of assay are given detailed explanation and illustration.

Structural Aspects of Cell Physiology. Edited by J. F. DANIELLI and R. BROWN. 357 pages, illustrated. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1952) $7.50.

This is Number VI of the annual series of Symposium Reports of the Society for Experimental Biology and contains papers read at the Symposium of the Society which was held at Bristol, England in July 1951. Among the authors contributing papers are: J. Runnström, J. Brachet, C. C. Lindegren, A. Frey-Wyssling and J. F. Danielli.

Survey of Biological Progress. Volume II. Edited by GEORGE S. AVERY, JR. 333 pages, illustrated. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1952) $7.00.

The Advisory and Editorial Boards of *Survey of Biological Progress* are attempting to use the volumes in this series as a method of integrating the field of biology. The contents of Volume II represent significant contributions toward that goal. The articles and authors included are: "Effects of Radiations on Biological Systems" by A. H. Sparrow and B. A. Rubin; "Progress in Human Genetics" by H. Kalmus; "Biological Oceanography" by Gordon A. Riley; "Morphogenesis in Plants" by Erwin Bunning; "The Control of Plant Growth by the Use of Special Chemicals, With Particular Emphasis on Plant Hormones" by Louis G. Nickell; "Histochemistry" by Florence Moog; "The Fine Structure of Protoplasm" by L. H. Bretschneider; and "Physiology of Reproduction in Plants" by Aubrey W. Naylor.

Survey of the Literature of Dental Caries. Prepared for Food and Nutrition Board, National Research Council. Publication 225. 567 pages. National Research Council-National Academy of Sciences, 2101 Constitution Avenue, Washington, D. C. (1952) $3.00.

The survey includes critical summaries of the literature on experimental dental caries in animals, the prevalence and pathology of dental caries in humans, and the relation of oral environment, fluorides and nutrition to dental caries. Six authors contributed in an attempt to bring together in historical perspective the bases for the present knowledge of dental caries. The authors include Guttorm Toverud, Sidney B. Finn, Gerald J. Cox, Charles F. Bodecker and James H. Shaw. The editorial committee consisted of P. C. Jeans, Chairman, C. A. Elvehjem and C. G. King.

Textbook of Practical Botany. R. C. MCLEAN and W. R. IVIMEY-COOK. 476 pages, illustrated. Longman, Green and Co., Inc., 55 Fifth Avenue, New York 3, N. Y. (1952) $7.50.

This book provides a laboratory manual complementary to the author's *Textbook of Theoretical Botany*. Descriptions of the material are original and the number of types described has been limited to those regarded as essential. Illustrations are almost entirely photographic. Quantitative measurements have been introduced into the experimental sections. The contents are divided into ten parts: Methods, Cytology, Evolutionary Morphology, Morphology and Histology of Angiosperms, The Sexual Reproduction of Angiosperms, The Classification of Angiosperms, Plant Physiology, Modifications of the Normal Plant Form, Plant Ecology, and Variation and Heredity.

The Tropical Rain Forest. P. W. RICHARDS. 423 pages, illustrated. Cambridge University Press, 32 East 57th Street, New York 22, N. Y. (1952) $12.50.

No general account of the tropical rain forest has been written since A. F. W. Schimper published his *Plant Geography* in 1898 (latest edition, 1935). As source material the author has utilized his own experience in the tropical regions of South America, Africa and Malaysia; the voluminous literature in the field; and a wealth of unpublished data obtained from foresters. The ecology of the tropical rain forest is discussed under the following headings: Structure and Physiognomy; The Environment; Floristic Composition of Climax Communities; Primary Successions; Tropical Rain Forest Under Limiting Conditions; and Man and The Tropical Rain Forest.

Vitamins and Hormones. Volume X. Edited by ROBERT S. HARRIS, G. F. MARRIAN and KENNETH V. THIMANN. 421 pages, with figures and tables. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1952) $8.00.

The publications in this series are filling the need for critical reviews in the vitamin and hormone field. The majority of the ten articles in the present volume are concerned with hormones, indicating the greater research activity in that area. The articles come from the fields of biochemistry, endocrinology, experimental zoology, animal husbandry, and clinical nutrition. The authors are: Eric K. Cruickshanks; Albert E. Sobel; Ernest Beerstecher, Jr.; Benjamin H. Ershoff; Rudi Borth and Hubert de Watteville; Robertson F. Ogilvie; Kenneth L. Blaxter; Leo T. Samuels; Charles D. West; F. Verzar; Ralph I. Dorfman. Each article has its own list of reference citations.

Your Community's Health. DEAN FRANKLIN SMILEY and ADRIAN GORDON GOULD. 454 pages, illustrated. The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. (1952) $5.50.

The authors of this book believe that every individual should have an active interest in the provisions for health and sanitation in his community. They state: "It is our hope that this volume may help individuals in all stations of life to visualize better the wonderful possibilities in community health improvement and encourage them to devote their time and energy to this important cause." The contents are divided into five sections: A Record of Progress; Controlling Health Hazards in Our Environment; The Community Attack on Specific Diseases and Disorders; Meeting the Needs of Specific Population Groups; Agencies for Improving Health and Welfare. A suggested list of sources of motion pictures on selected health subjects adds to the usefulness of the book.

Wild Flowers for Your Garden. HELEN S. HULL. 280 pages, photographs and line drawings. M. Barrows & Company, Inc., 114 East 32nd Street, New York 16, N. Y. (1952) $4.95.

This useful and attractively designed book can serve as a practical guide to the difficult art of making wild flowers at home in your garden, and at the same time be an incentive to those who have not yet discovered the pleasure of adapting native species of plants for ornamental purposes. The first third of the book is devoted to necessary horticultural and ecological information; the remainder is a delightful series of actual "case studies" describing 48 wild flower gardens in every state from Alabama to Wyoming. The author is a former president of the National Council of State Garden Clubs, and at present active in horticultural and conservation projects.

LETTERS
TO THE EDITOR

It is discouraging to see so much concern over material matters in your correspondents.

The true scientist is primarily interested, devoted, dedicated in and to what he can do for science and not what science can do for him. His concern is not with hours of work, wages, fame, or fortune—but with doing the best he can within the limits of his capacities.

His education has been given to him, literally. His obligations and responsibility is to work not for his own welfare but for society at large. Otherwise he has no claim to be considered a scientist. Old-fashioned? So what!

FREDERICK S. HAMMETT, Scientific Director, Emeritus.
Lankenau Hospital, Provincetown, Massachusetts.

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I would like to add some thoughts on this matter of recruiting biologists which is being discussed in the "Letters to the Editor" section of the *AIBS Bulletin*. Particularly, I wish to discuss briefly the comments made by Professor John D. Black.

I do not believe we have any "overproduction" of biologists as expressed by Professor Black. Far from there being too many workers in most fields of biology, there are too few. True, there is no shortage of personnel to fill available positions, but rather a shortage of personnel to do work which should be done. If this is true, and I know it is so in my field (insect taxonomy), then it is not a matter of either "recruiting" new people as such (Dr. Creighton's thesis) or of discouraging people from entering the field in order to cut down competition, or doing nothing to encourage them, which is the same thing (Professor Black's thesis), but rather a matter of impressing upon the minds of administrators the need for more positions in order to get more work done. When the positions are created, the other two aspects of this problem will take care of themselves, i.e., the new positions will cause a shortage of persons to fill the new jobs, which will in turn do two things—increase salaries, and attract new students to the field. This process should be a natural function in relation to the development of our profession.

There is another aspect of this matter which is a little more specific and needs some airing. I would like to open the subject, but it needs much thought for it is a complex problem. That is the increasingly popular practice of industries of "donating" scholarships and equipment to the universities for research purposes. This is a fine idea when the industries really pay their own way, but to me it seems that in a great many cases, the industries have succeeded in getting professional labor with no overhead and at manual labor prices. Viewing the field as a whole, this practice certainly does not help our already too low salaries and lack of adequate number of positions to do our work properly.

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Biologists in the Making

FREDERICK R. AVIS

Director, Pre-Collegiate Research Training, Jackson Memorial Laboratory, Bar Harbor, Maine, and Head, Science Department, St. Mark's School, Southborough, Massachusetts.

FOR the last four summers the Roscoe B. Jackson Memorial Laboratory has been conducting an interesting educational experiment. Dr. Clarence C. Little and the author launched the first session in June, 1949. Since then, fifty-seven students have attended the precollegiate research training school. The purpose of the program is to offer students of outstanding scientific ability and seriousness of intent an opportunity to do research and to benefit from their contacts with the scientists of the Laboratory staff. The research involves studies in genetics, normal growth, cancer and behavior. The results of this educational venture have been most gratifying and at the annual meeting of the Board of Directors in 1951 the program was established and recognized as an integral part of the Jackson Memorial Laboratory.

The program, of ten weeks duration, is divided into two parts. The first is devoted to the beginning students. The second is for those who have successfully completed the first summer session and proven their fitness for advanced work. The two groups are handled simultaneously each summer.

During the first three weeks the beginning students receive one-hour lectures, morning and afternoon, on the fundamentals of anatomy, physiology, genetics and behavior. Their laboratory work during this time is confined to a comparative study of the anatomies of three common laboratory animals, the mouse, guinea pig and rabbit. It has been our experience that few students are well grounded in mammalian biology. The main purpose of this introductory work is to familiarize the students with the materials which members of the Laboratory staff use in their research projects. The staff members are willing and anxious to lecture and give demonstrations in their own fields of interest. The success of the school directly depends upon this cooperation and assistance. Discussion periods following the lectures are challenging to both staff and students.

Demonstrations follow a definite plan. After a member of the staff has demonstrated a technique, the students practice it in the laboratory. When they are proficient they apply the technique to specific problems, many of which are pilot experiments. In this way the students learn some twenty techniques and apply them to about fifteen different problems. The students' reports on their experiments are placed in the permanent files of the Laboratory library. At the conclusion of the sessions, all of the young scientists who have successfully completed their projects are awarded certificates.

The following summary of their accomplishments indicates the scope of the experimental work undertaken by the first-year students.

Weight curves were established for three new inbred strains

of mice. The techniques of making red and white blood cell counts, differential white cell counts, and hemoglobin determinations by the Sahli method were learned. These techniques were then applied to two problems: changes in the blood picture of leukemic mice from two months of age to death, and differences in the blood picture of pregnant and pseudo-pregnant rabbits. After a demonstration of the techniques of transplanting malignant tumors, the students tested histo-compatibility by transplanting tumors from two inbred strains. Reciprocal transplants, transplants to F1 and F2 hybrids, and transplants to the backcross offspring of these two strains were used. The young scientists learned the technique of crossing *Drosophila* and performed experiments illustrating Mendelian inheritance and crossing over. The preparation of skeletons by use of the protein enzyme, papain, was demonstrated.

Following a lecture on "Antibody Formation," the students injected rabbits with the following antigens: dog red blood cells, guinea pig red blood cells, dog plasma, guinea pig plasma, and the bacteria that produce mouse typhoid. After three weeks the rabbits were bled and tested for the presence of antibodies by agglutination tests. Another investigator explained his techniques of superovulation, counting ova, and transplanting fertilized eggs. The students then studied strain differences in response to superovulation by using pregnant mare serum (FSH) and chorionic hormone (LH) for stimulating immature female mice, and counted the resulting ova.

Gonadectomy and adrenalectomy in the mouse were demonstrated following a lecture on "Eosinophilia and its Relation to the Adrenal." After mastering these operations, the group proceeded to an experiment involving the transplanting of the left ovary to the spleen and a week later removing the right ovary. They verified the known observation that malignant changes occur in the ovary when it is transplanted to the spleen.

The technique of taking vaginal smears and following the estrus cycle in the mouse was taught. Aseptic surgery was learned by each student. Through experience the students became proficient in administering ether, preparing animals for surgery, the methods of asepsis, preparing and sterilizing surgical kits and learning the duties of an assistant surgeon. They assisted the author with operations involving reciprocal transplantations of fertilized eggs in the rabbit and caesarian sections in rabbits.

During the last ten days of the session, the first-year students spent every afternoon in behavioral studies at the Hamilton Station, a part of the Jackson Laboratory, where they made observations on the following: dog behavior under varied conditions; the social behavior of guinea pigs; fighting behavior of mice; maze solving by dogs; and the herding behavior of goats.

Those students who, by their accomplishments during their first year, prove their fitness for this type of work are asked to return for a second summer as advanced students. They then attend the lectures given by members of the staff for the college group. Following these lectures each morning, they report to the laboratory of the member of the staff with whom they have been asked to do research and there they investigate a specific problem. In the afternoon, they work on other research problems under the supervision of the author. This group of young scientists has already shown the advantages of the first-year course, for in the last two years they have been co-authors, or contributors to some ten papers published in various scientific journals.

Some of the problems undertaken during this last summer by these advanced students were: the effects of ultra-violet radiation upon the ovary of the mouse; the effects of hypoxia upon the blood picture of pregnant mice of five strains; the transplantation of an extra adrenal gland to the spleen and the resulting effects on the host's adrenals; the effects of high protein or high fat diets upon the superovulation of immature mice; the effects of hypoxia upon the foeti of pregnant mice and rabbits; and, a cytogenic study of chromosome breakage. One student with outstanding ability in making accurate scientific drawings studied and illustrated the genesis of white cells in the mouse and in the course of the investigation disclosed some interesting new features of the life cycle of these cells.

Advanced students are required to investigate problems more thoroughly than the first-year students. Much more time is spent doing reference work in the library. Although each student has to report on only two problems, these follow the format of papers published in scientific journals using charts, graphs, illustrations and bibliographies. Students from the advanced group, who successfully complete their work and demonstrate definite ability, "graduate" to the summer college unit which is entirely separate from the secondary school program except for the morning classes.

Acceptance into the pre-collegiate program is highly competitive. Applications have come from a wide area. In the summer of 1952 students accepted came from seven states: Georgia, Maine, Massachusetts, New Hampshire, New York, Ohio and Pennsylvania, and the District of Columbia. The Admissions Committee endeavors to select students who have outstanding scientific aptitude, seriousness of purpose, mature behavior, and the ability to work and live happily with their fellow students. Each candidate is required to have an average of 85% or better in science and mathematics and to have taken one year of high school biology.

The physical equipment of the school is excellent. In February 1951, the heirs of the estate of Mrs. Morris C. Hawkes presented the Jackson Laboratory with her summer home, "High Seas," which consisted of a 42-room house on 15 acres of land, directly on the ocean front and bordering on Acadia National Park. This is now the site of the secondary school. The dormitories, dining hall, library, lecture room and laboratories are all in the main building.

Each student has daily work assignments. The discipline of such activities is felt to play an important part in the training of a good scientist. There are many opportunities for the students to take part in recreational activities. A protected area of water for swimming lies directly in front of the house. Softball, tennis, badminton and movies are other diversions available to add variety to a summer at Bar Harbor. Two rooms in the house are set aside as an infirmary. The author's wife, a graduate nurse, supervises the health of the group. All students are required to have accident and hospitalization insurance to cover the period of their stay.

This pre-collegiate program for young scientists is proving to be an extremely exciting and inspiring experiment in education. In a talk before the finalists of the New England Science Fairs last spring, Dr. George R. Harrison, Dean of Science at Massachusetts Institute of Technology, told the young people that 100,000 secondary school students, who are oriented towards science, must be turned out yearly in order to meet the needs of the country for trained scientific personnel. Unfortunately, less than half of this number are being supplied to the colleges. The Jackson Memorial Laboratory hopes, in a small way, that it is helping with this serious problem. In the September 1951 issue of the *Scientific American*, Dael Wolfle noted that "A million and a half Americans work primarily with their brains. The number of young people who are capable of such careers is finite, but we have not yet utilized them fully." In regard to the program at the Jackson Laboratory, he writes, "This approach—giving young students an opportunity to engage in research—seems to be an effective method of starting people on careers in science or scholarship." From our experience and from the students' reaction to the opportunity offered them, we agree with Dr. Wolfle. We sincerely hope that other institutions, not only in the biological sciences but also in the fields of chemistry and physics, will realize this challenge and will accept the privilege of serving our intelligent and scientifically enthusiastic secondary school youth.

College Teaching: Its Present Status and Its Improvement

HARRY J. FULLER

Professor of Botany, University of Illinois.

Presented by invitation at the annual meeting of the National Association of Biology Teachers, St. Louis, Missouri, December 29, 1952.

DURING his courtship of Clara Clemens, Ossip Gabrilowitsch gave many impromptu recitals on the Clemens piano while he awaited Clara's leisurely completion of those boudoir rites essential to feminine success in capturing a male. Usually the sole listener to Ossip's playing during these waiting periods, Mark Twain, after his exposure to some dozens of hours of classical music, commented that Ossip's visits to his home had brought him to the conclusion that not all music is as bad as it sounds. The title of this paper is not as bad as it sounds; there appears to be implicit in it a suggestion that college and university teaching is in a particularly dolorous state and that something had better be done about it. I should like to emphasize at the outset my conviction that the general quality of college teaching is not worse than that of performance and achievement in other professional activities—high school teaching, the law, medicine, dentistry, the church, engineering. The fact that the status of college and university teaching may be on a par with that of other professions should not, of course, cause us to be complacent and to neglect all opportunities for the improvement of our work.

That college and university facultymen vary enormously in those qualities which constitute excellence in teaching—patience, sympathetic understanding of young people, enthusiasm for one's field of learning, the transplanting of that enthusiasm into students, a sense of humor, breadth of background, experience, and interests, an almost ecclesiastical zeal to touch and enter and nurture young, impressionable minds—is obvious to all who have taught or studied in our collegiate institutions. Similarly discernible are those traits which at their least toxic level make of teaching a dull and neutral experience, at their worst a dead and corrosive one—lack of interest in students as human individuals, impatience, narrowness of interests and of background, the mistaken use of sarcasm and cynicism as educational devices, inelasticity of classroom procedures, intellectual isolationism, a humorless approach to teaching.

The improvement of college teaching is thus a two-fold process: first, the development of those traits which constitute excellence in teaching; second, the reduction, or preferably the elimination of those traits which characterize poor and uninspired teaching. The accomplishment of these aims is, of course, by no means a simple act, one to be achieved quickly by divine lightning or by energetic devotion to a philosopher's stone. Many of those traits which are the fortunate gifts of superb teachers, as well as those which are the unhappy possessions of inept teachers are the almost immutable products of both heredity and environment and, as such, are psychological structures of the teacher's personality, structures which cannot be easily remodeled, at least in any pronounced qualitative degree. Yet, from time to time, the naive suggestion is made that marked improvement in the quality of collegiate teaching might be achieved through more or less externally applied stimulation. Thus, there are those who believe that our profession might raise the general level of its teaching if its practitioners were required to study courses in professional education. While it is doubtless true that some courses might bring new insight and thus some teaching improvement to some college professors, it is naive to assume a high degree of correlation between the completion of the standard courses in education and excellence of teaching, either at the college level or at any other educational level. If the problem were so simple, if the usual courses in education were the vade-mecum in the development of teaching skill, then it follows logically that the very best teaching in any college or university should be that done by professors of education. It requires little experience on college and university campuses to realize that this is simply not true; certainly the quality of teaching performed by professors of education is not above the general average of college teaching, if it is even so high as the average. Similarly, if courses in education were the touchstone, then the quality of instruction in public schools, whose teachers have generally completed a battery of education courses, should be conspicuously superior to that of many private schools not all of whose teachers have reveled in that "constellation" of courses generally prescribed by state certification laws.

It is frequently suggested also that college teaching might be invigorated through such largely external devices as frequent shifts in course organization and sequences, through the inauguration of programs of general education, through the increased use of motion pictures, television, and radio in classrooms, through the employment of professional examiners and mechanical grading machines, and through augmented programs of student guidance. It is no doubt true that certain such devices can sometimes result in an amelioration of dismal teaching, but to assume that such practices can do more than effect occasional fringe benefits is to subscribe to a very naive interpretation of what constitutes teaching skill. The use of visual aids on an extensive scale assuredly does not conspicuously increase the teaching effectiveness of a dull and fumbling professor; rather, it simply gives his students more frequent respite from his ministrations. Similarly, the creation of general education courses is no guarantee that teaching will therefore be improved; true, general education courses are often more attractive to average and lower-than-average students, since frequently by reason of more superficial treatment of subject-matter and the cancellation or reduction of laboratory work, they are relatively easy and unburdensome. General education is not merely something which involves a changed emphasis upon or a higher degree of selection of subject matter; general education in its best sense involves equally certain habits of thought, certain intellectual attitudes of objectivity, of discrimination, of tolerance, of honesty, of searching penetration. Too often we have created so-called

general education courses simply by watering down subject matter, by glossing over the tough spots in a subject, by eliminating the mental drudgery which are a part of every field of learning. The most desirable aims of general education are fulfilled largely by the skill of a teacher; a one-quarter course in the history of the Ottoman Empire might, under the influence of a skilled, wise, and stimulating teacher, contribute more largely to the aims of general education than a full year's course in the history of mankind taught by a superficial and flashy professor of poor intellectual equipment but of high histrionic ability.

I have thus far written about only those props of dubious value which are sometimes used in an effort to shore up sagging teaching, and I come now to a consideration of procedures and practices which may effectively improve teaching. I do not propose to examine in detail the many specific techniques which sometimes result in better teaching: the frequent re-working of lecture notes, the delivery, insofar as it is possible, of lectures without recourse to notes, the introduction of frequent class discussions into laboratory work, etc. Rather I should like to discuss two convictions which I hold concerning matters vital to the improvement of college and university teaching.

First of these is my conviction that breadth of knowledge, of background, of experience is essential to excellence in teaching. As I have already indicated, I believe that one of the marks of a good teacher is his ability to relate his subject matter to other areas of human knowledge and of human intellectual accomplishment. In order to do this effectively and in stimulating fashion, the college teacher must have had experiences which are both broad and intensive. For the gaining of such experience, I strongly recommend a varied background in the humanities and in the more respectable social studies for professors of sciences, and, for professors of the humanities and social studies, a solid foundation in science. My own field, botany, for example, can be made vastly more interesting to students if a professor of that subject can relate some of his material to human history, to anthropology, to ethnology and archaeology, to economics, to the earth's history, and to agriculture. I strongly recommend travel as an additional component of such an extensive background, especially travel which is related to a professor's field of specialization. I am aware, of course, that the financial returns of our profession sometimes preclude or shrink the possibility of such travel, but I am convinced that travel is an essential ingredient in that background which makes for effective and interesting teaching. Certainly a professor of classics who has visited Italy and Greece and some of the classical libraries of Europe can bring to his classes a vividness of personal experience which will enhance his teaching. Similarly, every botanist should visit as many geographical areas as possible to examine and study their varied types of vegetation; a botanist's first visit to a tropical rain-forest will ever be a memorable experience and will inevitably bring added interest to his teaching. Further breadth of experience which can contribute to improved teaching will result from an occasional sally from the ivy-clad halls to a job in private industry or in government; such a job held for even so short a period as a summer may bring contacts and experiences which will broaden the professorial viewpoint and which may thus contribute to better teaching.

My second conviction is that really significant improvement in college teaching can come only from the internal desire of a professor to achieve excellence in his teaching and that such desire often needs (if I may use this much over-worked word) motivation. This motivation may be a function of his personality and character; he may try to do an excellent job of teaching simply because of his devotion to excellence in any endeavor in which he may participate. Or it may arise from that immeasurable and soul-warming pleasure and satisfaction which come to him in the form of expressions of appreciation from his students long after they have left his classes. Then that motivation may be in considerable degree a function of the incentives which are held out to him by collegiate administrators in the form of promotions and of salary increases. And this leads me to another conviction, one which may be unpopular with some readers of this paper, namely, the conviction that, despite their pious pronouncements concerning the importance of excellent teaching in the work of a university, many deans and presidents pay only lip service to this ideal and continue to grant promotions in rank and pay much more rapidly and more generously to men who excel in research than to those who are primarily excellent teachers. I have known deans, for example, who pontificate upon the high value of teaching and who, in the next breath, when they are asked to advance a facultyman from one academic rank to another, ask immediately for a list of his publications. This attitude of many deans and presidents is a very human one and an understandable one. It is much easier to weigh the publications of a professor who is primarily an investigator or to count his annual wordage than it is to evaluate the less tangible, less easily measured achievements of a man who is simply a superb teacher. Further, a man who is primarily a teacher has less advertising value for his institution than does the man who publishes numerous research papers and who sooner or later, as a consequence, is elected to office in a national professional society or who is called upon to advise government agencies or manufacturers of fertilizers, synthetic fibers, or bridges. The evidences in support of my assertions are readily apparent on numerous campuses, principally those of large universities rather than those of smaller institutions which are more likely to place greater emphasis upon teaching excellence as a criterion for promotion. Compare the salaries, for example, of men who are especially distinguished in research with those of facultymen who are primarily teachers. Compare the rates of promotion of men in these two groups through the usual academic strata. Both comparisons will show that in most larger institutions the investigator is more highly prized than the teacher. Further, almost every large university has its quota of more or less perennial and often rather pathetic assistant professors and associate professors, men who have not been advanced to a higher rank, often because they have devoted their lives and their energies to teaching and have failed to become authorities upon the diatoms of Lake Titicaca or upon the evolution of the subjunctive in early Etruscan literature. These men, through their excellent teaching, may have exerted deep educational influences upon the minds of generations of students, but, in the absence of research publications, they are often overlooked when promotions are made. Of course, by occasional acts of administrative grace, they sometimes attain associate professorships or full professorships within a year or two of their retirement, along with an illuminated scroll and Swiss-steak testimonial dinner in a college dining hall at the close of their final semester of service.

Then investigate the methods of granting sabbatical leaves to facultymen; the application for such leave must ordinarily be accompanied by a detailed plan of research to be undertaken during the leave, and the application is then commonly passed upon by a committee composed of professors primarily interested in research or by a graduate dean whose fundamental interest is in research. In many of our large universities, the professor who wants a sabbatical leave simply to travel, to broaden his background as an asset to his teaching, to visit great teachers in other universities, to roam through that tropical rain-forest, to engage in a variety of experiences which will, in short, make of him a better teacher, is likely to receive short shrift from those who pass upon such requests. When the recipient of a sabbatical leave returns to is cloister he is usually expected to turn over, within a reasonable period, to his graduate dean or the research committee a reprint (standard minimum is one reprint per sabbatical leave) in evidence of the research accomplished during his absence from his post.

That greater importance is attached to research and graduate teaching than to undergraduate teaching in many institutions is supported by several types of evidence. In many of our universities, for example, facultymen have arrived when they have rid themselves of freshman, sophomore, and junior courses and when their teaching duties involve only seniors and graduate students. In many universities, freshmen and sophomores are taught largely by assistants, instructors, and assistant professors, apparently as a consequence of the widely-held opinion that the teaching of lower division students is not worthy of the efforts of the higher professorial strata. Recently, in thumbing through the catalog of one large university, I was amazed to discover that in certain curricula, students might, throughout their freshman and sophomore years, receive all their instruction from part-time assistants. (I do not mean to imply that teaching by junior facultymen is *per se* bad; my experience indicates that it is often superior to that done by full professors—but this doesn't alter the basic principle). Often preoccupation with the teaching of undergraduates is discouraged by senior staff members. I shall never forget an admonition which I received from a distinguished botanist, an investigator rather than a teacher, when I began my first full-time teaching job. "Son," he observed, "if you want to get ahead in university work, concentrate upon your research and publish as often as you can. And don't waste time on students. Put a sign on your door indicating that your office hours are 5 on Fridays and 8 on Saturdays; then you'll never be bothered by students."

I do not mean in these lines to imply any disparagement of research. Research is important in human life, important in man's intellectual growth and in his practical affairs, and it is perhaps most effectively prosecuted and given its widest scope within the walls of universities and colleges. Every encouragement should be given by academic administrators to research through the provision of funds, of facilities, of personnel. At the same time we must be mindful of these things; that teaching is of equal, if not of greater importance, that the quality of teaching in our colleges and universities exerts profound influences upon the future of our citizens and upon our society, that not all facultymen have the same talents and abilities. I ask only that the academic administrators recognize these differing talents, that they reward excellence in teaching and in research on an equal basis; to do this places a special obligation upon deans and presidents, for, as I have written, the evaluation of excellence in teaching is vastly more difficult than the evaluation of excellence in research. Academic administrators, further, should regard with an attitude of cautious skepticism the old bromide that there is a high correlation between great teaching ability and great research ability, for the exceptions to this generalization are so numerous as to make it of dubious validity.

Academic administrators who will recognize the diversity of talents of their professors, who will not attempt to force all their facultymen into the same mold, who will reduce teaching loads for talented investigators who want to concentrate their efforts upon research rather than upon teaching, who will expand the teaching opportunities for those professors who are primarily interested in teaching, who will honestly reward excellence in teaching as they reward excellence in research, can, through the provision of such incentives, stimulate an interest in teaching and make a notable contribution to the improvement of teaching in the colleges and universities of our country.

In thus providing incentives based upon the recognition of the varying talents of facultymen, university administrators may actually contribute to the improvement of research and of the publication of research results, as well as to the improvement of teaching. In many institutions in which research activity and publication are the basic criteria for academic promotion, there is a tendency of facultymen generally to engage in research and to publish research results. In view of the wide variation in the distribution of research talent, this situation inevitably results in the pursuit of research of trifling value and in the publication of many mediocre, insignificant research papers. If facultymen whose talents run primarily to teaching excellence rather than to skill in research had the assurance that their teaching talents would be recognized as a valid criterion for promotion, such professors, I suspect, might publish research papers only when they had something really significant to say, rather than publish numerous papers chiefly in order to build up an impressive personal bibliography with which to bedazzle deans and presidents. The effect of this restraint in publication would certainly ease the burden upon reviewers and editors of scholarly journals and would result, through the decrease in the publication of third-rate papers, in at least a relatively improved quality of published research papers.

Human Biology in Medical Education

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At a discussion of "Human Genetics in Relation to Academic and Public Health Education," sponsored by the American Society of Human Genetics at the Cornell meeting, Dean Currier McEwen of the New York College of Medicine called attention to the proposed establishment of a Human Biology Department at that institution. Dr. Sheehan's article discusses this program in more detail.

DURING the past fifty years, advances in bacteriology, biochemistry, and chemotherapy have made it possible to bring under control the acute infections and epidemic diseases which were responsible for a large proportion of man's ills. The life expectancy of man has increased by twenty years during the last quarter of a century, and as a result the emphasis in medicine has shifted to disorders of a constitutional, chronic, or degenerative nature.

The proper understanding of all illness demands an appreciation of the biological and sociological factors which may be its forerunners or consequences, but this fact has perhaps never been more evident than today, as the chronic and constitutional diseases become increasingly dominant. Knowledge of this sort would not only enable the physician to deal more effectively with the individual and his disease, but would also equip him to cope with the social problems inherent in the maintenance of a healthy and productive population. Without such a background, the medical profession is largely unpre-

pared to provide the counsel and leadership which contemporary society requires.

The integration of sociological factors with biological studies of growth, inheritance, and constitution provides, therefore, a rational approach to the understanding of man as a responsive individual in a complex and changing environment. Furthermore, such an approach is essential to modern medicine if we are to meet effectively the most challenging problems bearing on the health of the community.

Consideration of these facts has led to the proposal that medical education be reoriented by increasing the emphasis on those fields of biology and the social sciences which promise to be most fruitful in this regard. The following pages suggest how such a reorientation might be accomplished.

We have witnessed two major eras of development in modern medical education. The first of these, predominantly clinical, achieved its ends by extensive use of apprenticeship techniques and resulted in the large number of doctors who assumed the duties of general practice. The second period was characterized by the establishment of medical specialties. Medical schools attained a high degree of uniformity in establishing standards for students, faculty, and curriculum, and the sciences of biochemistry, physiology, and pharmacology rose to prominence.

The modern student of medicine accordingly enters his clinical studies with a more dynamic concept of the cellular processes than did his predecessors. This concept nevertheless suffers from lack of perspective, for it fails to relate the activities at the cellular level to the behavior of the organism as a whole.

The experiences of the clinical years do little to remedy this deficiency. Once the introductory period has passed, the student becomes immersed in the study of the pathology of disease; generally under conditions of effective isolation in hospital wards. From this time onward, he has little opportunity to consider man as a member of society or to incorporate the facts of human behavior into his rapidly expanding body of educational experience. True, the physician in later years has rich opportunities to appreciate at first hand the interplay of forces which condition the state of health of his patients. Yet, through lack of early training, he is too often limited in his effectiveness when dealing with the social aspects of his practice.

The objective then is the development in the student of a concept of man as a total organism, having definite inherited attributes, with capacities for growth, development and deterioration, and subject to innumerable environmental influences . . . physical, psychological, and sociological. Such a concept is essentially biological in the broad sense, and its development is the province of a science of human biology.

THE STUDY OF NORMAL MAN

A science of human biology, in the fullest meaning of the term, would require the utilization and experience of a great many disciplines for its development. Of these, certain areas or fields of study deserve special consideration.

Genetics: First, the concept of normal man must have a genetic basis. The nature of genes, and their interactions, determine the various morphological and physiological characteristics, some of which are related to physical or mental diseases and to the development of particular personalities and patterns of behavior. Human genetics, therefore, is not only important from a strictly medical point of view, but also impinges upon many facets of individual and social achievements. The genetic aspect of the normal human individual is scarcely touched upon in present teaching. Future students of medicine must be familiar with the pertinent principles of the science of inheritance and be capable of utilizing them in order to comprehend the full potentialities and limitations of man.

Growth: Secondly, provisions must be made for the consideration of man's growth and development. Instruction in this field has generally been confined to a description of the more striking morphological changes which take place from the fertilization of the ovum to the birth of the infant. Recently, however, our knowledge of child development and the processes of aging has been decidedly increased, largely by the collaboration of the social and biological sciences. It has been demonstrated, for example, that each individual follows a particular curve of physical and mental growth. Deviation from it spells sickness, a return to it brings health and effectiveness. Attention should be devoted to the full cycle of development, both pre- and postnatal, with exploration of the interplay of genetic, environmental and hormonal factors, and their relation to the appearance of abnormalities.

One need only reflect on the extraordinary complexity of forces which interact in the production of a mature and functioning organism from a single fertilized cell, to gain a glimpse of the challenges inherent in the full developmental history of an individual.

Constitution: Thirdly, it is desirable to extend the students' knowledge of man's constitution. Knowledge of structure is a basic prerequisite for the understanding of function. As Claude Bernard has aptly phrased it, "anatomy localizes physiology." More than this, morphology is the language of communication of all biological sciences, and it is essential in the interpretation of new physiological advance. This holds true not only at the level of gross structure, but at all levels of organization, including the ultramicroscopic, where, as Schmidt reminds us, "the boundaries between morphology, physiology, and biochemistry largely disappear." Hence the importance of advancing studies in morphology with the newer tools such as electron microscopy and histochemical analysis.

Bodily Adjustments: Fourthly, a program of human biology must encompass the analysis of the mechanism involved in man's adjustments to change. The regulatory actions of the nervous and endocrine systems maintain an equilibrium within the organism amidst widely fluctuating conditions. Yet under certain circumstances, such as severe stress, man's neural and hormonal balance may be sufficiently disturbed to give rise to symptoms as real as any produced by organic disease. Furthermore, such functional disturbances, if sustained, may lead to organic change. Thus many of the chronic and constitutional illnesses such as heart disease may have their antecedents in disturbances of the fundamental self-regulatory mechanism of the body.

Such neural and endocrine balances are, therefore, of importance in health and disease. Their close interrelation demands that they be studied simultaneously when the foundations for a comprehensive study of man are being laid. There would be the further advantage of providing in the medical curriculum for the first time a specific place for the science of endocrinology.

Behavior: Finally, the study of normal man cannot be complete without considering human behavior as it reflects responses to the environment. This includes the physical and psychological environment, man's cultural background, his living and working conditions, and above all his relationship with his fellowman. Experimental and clinical psychology have already made contributions of special importance in these directions. Further evaluation of environmental forces with reference to human behavior by these and other disciplines should continue to produce significant results.

These are the aspects of the organism as a whole which require integration in order to arrive at an acceptable con-

cept of human biology. Contributions from allied sciences, such as physiology, microbiology, psychology, preventive medicine, and psychiatry would supplement and extend such a concept. The fundamental aim would be to provide within the scope of a single institute this basic orientation to the study of man.

AN INSTITUTE OF HUMAN BIOLOGY

The accommodation of this concept of human biology in the medical curriculum obviously requires some reorganization of instructional units. The ultimate consequence may possibly be the replacement of the conventional preclinical departments with groups concerned with cooperative investigation and instruction in fields such as those just suggested. The immediate need is an arrangement which would permit the development of this new approach without disrupting the continued advance in the physical sciences in the other preclinical departments.

It is suggested that this need be met by creating an Institute of Human Biology, centered around the existing Department of Anatomy, but including members from other departments throughout the Medical Center. The Department of Anatomy is the logical center for such an innovation by reason of its established concern with many aspects of the contemplated program and the biological inclinations of its personnel. Furthermore, this department is responsible for introducing to the student at the very beginning of his training the concept of normal man.

The Institute of Human Biology would be comprised of five sections corresponding to the fields of interest previously mentioned. In outlining the scope of these sections an attempt should be made to emphasize trends and possible routes of approach, rather than to construct an inflexible operating scheme. What must be attempted is a consideration of each of the various sciences necessary to the understanding of normal man in a way broad enough to indicate the scope

Dr. Selman A. Waksman, Director of the Institute of Microbiology at Rutgers University and discoverer of streptomycin and neomycin, examines a separator funnel of the type first used in separating the antibiotic drug from the culture medium. Dr. Waksman was recently awarded the Nobel Prize in medicine and physiology for his work in the discovery of streptomycin. The citation accompanying the award said streptomycin was the first effective antibiotic found for use against tuberculosis.

of the project, and yet with sufficient detail to exemplify the types of activity which are needed. In order that scientists might be attracted to the development of such an institute, its aims must be clear and yet its program must be broad enough to allow the free exercise of judgment in choosing specific ways of reaching its goal.

The potentialities of the program are manifold. There would be the influence on the practice of medicine as exerted through a new generation of physicians. But the influence would extend beyond the boundaries of the field of medicine. Human biology embraces, to quote Barnett, "health and disease, food, the sizes and quality of human population, the diversity of human types and their abilities" which are "all topics on which knowledge is not only desirable but for a twentieth-century adult necessary." One of the most significant contributions of such an institute, therefore, would be the training of specialists, nonmedical as well as medical, in the science of human biology. The success of this experiment might therefore play an important role in directing future trends in general as well as special education.

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KNOW YOUR SOCIETIES

This feature column was begun in the July 1952 BULLETIN *and will be continued until all the American biological societies have appeared. If further information about a particular society is desired, the Society Secretary should be contacted.*

THE AMERICAN MICROSCOPICAL SOCIETY

Total membership: 587. **Types of membership:** active, life, sustaining, honorary. **Dues:** $4.00 per year for members, $6.00 for subscribers. Beginning in 1953, dues will be $5.00 for members and $8.00 for subscribers. **Journal:** TRANSACTIONS. **Officers:** President: Frank E. Eggleton; Vice-presidents: G. W. Martin, Martin W. Johnson; Secretary-editor: C. J. D. Brown, Department of Zoology and Entomology, Montana State College, Bozeman, Montana.

The American Microscopical Society was founded in Indianapolis, Indiana in the summer of 1878. After a preliminary investigation to determine the extent of interest, the Indianapolis Lyceum of Natural History had issued a call, in May 1878, for a national congress of microscopists, which was held in its city in August of that year. The society was established during those meetings and a constitution adopted which stated the purpose of the new society to be "the encouragement of microscopical research, interpreted in its broadest sense." That objective has remained unchanged to this day. At its first and succeeding annual meetings, the Society presented a program of papers. Such paper-reading sessions continued to be the major attraction of the meetings until well past the turn of the century. Gradually the nature and extent of the programs changed, however, and before the 50th anniversary was celebrated paper-reading sessions had been discontinued. They were not reinstituted until the 67th meeting at Columbus, Ohio in 1950. At that time the first of three annual symposia was presented under the general title of "Modern Methods in Microscopy."

Publication of worthy research has been one of the avowed functions of the Society from the day of its founding. Beginning in 1879, and continuing until 1891, the Society published an annual volume of its *Proceedings*. Publication became somewhat irregular until 1896 when the first volume of the journal to bear the title *Transactions* was published. What might properly be called the modern era of the *Transactions* began in 1911, with Volume XXX, when for the first time, the Editor adopted a definite schedule of publication and the magazine began to appear quarterly. That policy has been maintained without interruption since that time.

Active membership in the American Microscopical Society may be obtained by written application and the payment of dues for one year. All members receive the *Transactions*, but subscriptions by libraries, institutions, etc., does not entail membership. The society does not offer placement service, publish regular book reviews or print news items.

The time and place of annual meetings are determined by the Executive Committee. It has been the practice in the past to meet in conjunction with one of the large national science organizations, such as the *AAAS* or the *AIBS*.

THE AMERICAN PHYSIOLOGICAL SOCIETY

Total membership: approximately 1,300. **Types of membership:** active and honorary. **Dues:** Set each year (journal subscriptions not included). **Journals:** AMERICAN JOURNAL OF PHYSIOLOGY, PHYSIOLOGICAL REVIEWS, JOURNAL OF APPLIED PHYSIOLOGY. **Officers:** President: E. M. Landis; President-elect: E. F. Adolph; Secretary-treasurer: H. E. Essex; Permanent Secretary: M. O. Lee, 2101 Constitution Avenue, Washington 25, D. C.

The American Physiological Society had its origin at a meeting held December 30, 1887 in the physiological laboratory of the College of Physicians and Surgeons, New York City. The committee responsible for its organization was composed of S. Wier Mitchell, H. N. Martin and H. P. Bowditch. The membership at that time was 28. For those who may be interested in the detailed history of the Society reference should be made to "History of the American Physiological Society semicentennial 1887 to 1937, Baltimore, Maryland 1938."

The purpose of the Society is to promote the increase of physiological knowledge and its utilization. Any person resident in North America who has published meritorious original research in physiology is eligible to membership in the Society. Distinguished scientists of any country who have contributed to the advancement of physiology may be elected to honorary membership. The dues are set each year by the Council of the Society. Members of the Society may obtain any or all of the three publications of the society at reduced rates, but membership in the society does not carry subscription to the journals.

The American Physiological Society holds two meetings each year, one each spring with the Federation of American Societies for Experimental Biology (of which it is a member) and one in the autumn apart from the Federation. Any member may present papers at these meetings.

AMERICAN SOCIETY FOR EXPERIMENTAL PATHOLOGY

Total membership: 369. **Types of membership:** active and honorary. **Dues:** determined, from year to year, by the Council. **Officers:** President: F. S. Robscheit-Robbins; Vice-president: S. C. Madden; Secretary-treasurer: R. L. Holman, Louisiana State University, School of Medicine, New Orleans, La.

The American Society for Experimental Pathology was founded to "bring the productive investigators in pathology, working essentially by experimental methods, in closer affiliation with the workers in other fields of experimental medicine."

Active membership is open to "any American investigator, who, through the use of experimental methods, has, within three years prior to his candidacy contributed meritorious work in pathology." Two classes of membership exist: active and honorary. Honorary members are elected from the active list or from the group of distinguished pathologists at home or abroad. Active members are nominated at or before an annual meeting by two members of the Society and voted by a majority at the time of the annual meeting. Active members pay dues that are determined, from year to year, by the Council. Honorary members pay no dues but have no vote in the Society and are not eligible for office. Annual meetings of the Society are held at the same time and place as the Federation of American Societies for Experimental Biology.

AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE

Total membership: 1620. **Types of membership:** active and associate. **Dues:** $6.00 for both types of membership (includes journal). **Journal:** PROCEEDINGS OF THE AMERICAN SOCIETY FOR HORTICULTURE SCIENCE. **Officers:** President: S. H. Yarnell; Vice-president: F. P. Cullinan; Secretary-treasurer: Freeman S. Howlett, 1224 N. Palmer Street, Wooster, Ohio.

The American Society for Horticultural Science was organized in September 1903 at Boston, Massachusetts. This original meeting was called in response to a circular letter proposing such an organization, that had been sent out under the auspices of the American Pomological Society. The purpose of the new society, according to the records, was "the strengthening of horticultural investigation and teaching of its scientific side and the aiding in the development of horticulture as a science." The field of the society was to "lie between that of the popular societies on the one hand and that of the societies for general science on the other hand and to connect them." The first president of the Society was Liberty Hyde Bailey, the most prominent American horticulturist of our time. The Society was divided into three sections: pomology, vegetable crops, floriculture and ornamental horticulture. In 1947 a processing section was added.

The publication of the *Proceedings* is one of the major activities of the Society. These are published twice annually and consist of research papers written by members. The *Proceedings* also afford access to the current publications in the field of American horticulture and author distribution through a world-wide area. Abstracts of papers presented at the annual meetings are also made available upon request.

There are two types of membership: active and associate. Any person holding a baccalaureate degree and actively engaged in research or education is eligible for active membership. Associate membership is unrestricted as to occupation or scholastic attainment, but is subject to the approval of the Executive Committee. The Society welcomes foreign memberships, finding this association one of the vital aspects of the Society.

In addition to the annual meetings, which at present are held with *AIBS*, and provide an occasion for the presentation of scientific papers, the Society also sponsors four regional groups which also meet annually. At the annual meeting of the whole Society, five awards are announced and presented in recognition of the outstanding papers published in the *Proceedings* and covering the various divisions of Horticulture. Through these various activities, the Society feels that it is succeeding in its stated purposes, that of promoting individual achievement by means of group activity and advancing the profession of horticulture by member contributions.

THE AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS

Total membership: 500. **Types of membership:** regular and honorary. **Dues:** determined by majority vote at the annual spring meetings upon recommendation of the Council. **Officers:** President: McKeen Cattell; President-elect: K. K. Chen; Treasurer: Robert P. Walton; Secretary: Carl C. Pfeiffer, Dept. of Pharmacology, University of Illinois College of Medicine, 1853 W. Polk Street, Chicago 12, Illinois.

The American Society for Pharmacology and Experimental Therapeutics was founded in 1909 by Dr. John J. Abel. Any person who has conducted and published a meritorious investigation in pharmacology or experimental therapeutics and who is an active investigator in one of these fields is eligible to membership, subject to the rules of nomination and election. Dues, to be paid by all regular members, are determined by a majority vote at the annual meeting, upon recommendation of the Council. Publication funds are separate. The annual meetings of the Society are held at a place determined by the Council in consultation with the Executive Committee of the Federation of American Societies for Experimental Biology. Special fall meetings are held at such places as the Council may determine.

AMERICAN SOCIETY OF AGRONOMY

Total membership: 2,260. **Types of membership:** active, associate, fellow, corporate, student. **Dues:** $11.00 per year for active members (includes journal). **Journals:** AGRONOMY JOURNAL, WHAT'S NEW IN CROPS AND SOILS. **Officers:** President: D. W. Robertson; Vice-president: H. E. Myers; Secretary-treasurer: L. G. Monthey, 2702 Monroe Street, Madison 5, Wisconsin.

The American Society of Agronomy was organized in Chicago on December 31, 1907 as an outgrowth of the Agronomic Seminar conducted by and for employees of the U.S. Dept. of Agriculture. From the 101 charter members, the society has grown to a membership of 2,260 (1951). As well as every state in the Union, 23 foreign countries are represented in this membership figure. 1,086 of the members belong to a member organization, the Soil Science Society of America. In 1948 the Society was organized as a nonstock corporation under the laws of Wisconsin.

The object of the Society is to "increase and disseminate knowledge concerning soils and crops and the conditions affecting them." These objectives are carried out by means of: regular annual meetings; regional, state and sectional meetings; the *Agronomy Journal*, a technical periodical; and *What's New In Crops and Soils*, a semi-popular periodical for farm advisors and leading farmers.

All persons interested in the objectives of the Society, both professional agronomists and other individuals, are eligible for membership in the Society. All members of the Soil Science Society of America are automatically members of the American Society of Agronomy as well. In their case, the $11.00 dues include membership in both societies, plus a subscription to the *Soil Science Society of America Proceedings*, a quarterly scientific journal. With the payment of dues totalling $19.00, a member receives the privileges of active membership in both societies and a one-year subscription to both the *Agronomy Journal* and the *Soil Science Society of America Proceedings*.

Sites for the annual meetings of the American Society of Agronomy and the Soil Science Society of America, which are always held jointly, are selected about three years in advance by a special Annual Meetings Committee appointed by the president of the Society. Generally speaking, the meetings are held in the central part of the U.S. with an occasional

(Continued on page 29)

PRIVATE BIBLIOGRAPHIES

The Publications Committee of the AIBS, during a recent meeting in Washington, discussed the advisability of locating and cataloguing private bibliographies and indexes held by individual biologists. It was felt highly desirable and in the interest of scientific communication to prepare a list of such collections that their existence could be recorded and their use greatly extended. A few years ago, when the interest in guayule was at its peak, a privately held bibliography of literature on rubber, critically selected, saved hundreds of man-hours and guided the research efforts of this important project. In the event of another national emergency as well as in the furtherance of peace time research, the availability of literature citations in a given field would greatly facilitate and implement research activity.

In an effort to discover the location of such bibliographies and the willingness of those who hold them to share them with others and list them with the AIBS, the following questionnaire has been prepared and published. All biologists who are willing to cooperate in this project are urged to complete this form and return it to the AIBS office, 2101 Constitution Avenue, Washington 25, D. C. If more than one bibliographic collection is possessed by a single individual, please add similar information about each collection.

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meeting in the extreme East, West or South. About one meeting in every three is a summer meeting, usually held on the campus of an agricultural college.

The American Society of Agronomy, with the Soil Science Society of America, is one of the few agricultural scientific societies which maintains a central headquarters office with full-time personnel. This office handles the editorial work on all three of the Society's publications, plus all the business and membership work normally performed by a professional association of this type. It is perhaps the only agricultural society of its type which publishes a popular magazine on recent development in its field for the benefit of farm leaders and farmers interested in these research results.

AMERICAN SOCIETY OF ANIMAL PRODUCTION

Total Membership: 1,201. **Types of membership:** regular. **Dues:** domestic members, $5.00; other American, $5.50; other foreign, $7.00 (includes journal). **Journal:** JOURNAL OF ANIMAL SCIENCE. **Officers:** President: H. M. Briggs; Vice-president: M. L. Baker; Secretary-treasurer: J. I. Miller, Cornell University, Ithaca, N. Y.

The American Society of Animal Production was organized at a meeting in Chicago on November 21, 1908, under the name of the American Society of Animal Nutrition. There were 33 charter members and the first president was H. P. Armsby. The chief object in founding this society was to improve the quality of investigations in animal nutrition. By 1912 the interests of the Society had broadened to include other phases of animal production and therefore the name was officially changed to the American Society of Animal Production.

Starting in 1915 a "Record of Proceedings" of each annual meeting was published. This publication was terminated when the Society began the publication of the *Journal of Animal Science* (Quarterly) in 1941.

All persons engaged or previously engaged in investigation, instruction or extension in animal production or in the production of livestock or livestock products are eligible for membership in the Society. Only "regular" membership exists and the payment of annual dues entitles the member to a subscription to the *Journal of Animal Science.*

The annual meeting is held at Chicago on the Friday and Saturday preceding the International Livestock Exposition.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS

Total membership: 917. **Types of membership:** active (full) and emeritus. **Dues:** $2.00 per year plus $3.00 for FEDERATION PROCEEDINGS. **Officers:** President: V. du Vigneaud; Vice-president: H. A. Mattill; Treasurer: P. P. Cohen; Secretary: E. H. Stotz, Biochemistry Department, University of Rochester School of Medicine and Dentistry, Rochester 20, N. Y.

The American Society of Biological Chemists was established in 1906. It has not been the purpose of the Society to grow at a maximum rate, but rather to require research accomplishment and active participation in the field of biological chemistry as a prerequisite for membership. Membership nominations require recommendation from two members, a curriculum vitae, list of publications and sample reprints. Nominations are considered by the Council members independently, jointly by the Council at the time of the spring meeting, and election takes place at a Business Meeting of the Society. Other than the emeritus status, only full membership is recognized. As a member of the Federation of American Societies for Experimental Biology, this society meets with that body every spring.

AMERICAN SOCIETY OF HUMAN GENETICS

Total membership: 430. **Types of membership:** regular, corresponding and associate. **Dues:** $8.00 per year for regular and corresponding members (includes journal); $2.00 per year for associate members (journal not included). **Journal:** AMERICAN JOURNAL OF HUMAN GENETICS. **Officers:** President: C. P. Oliver; Vice-president: James V. Neel; Treasurer: C. N. Herndon; Secretary: S. C. Reed, Dight Institute, University of Minnesota, Minneapolis 14, Minnesota.

The American Society of Human Genetics was organized at Washington, D. C., in September, 1948. Its objectives are to provide opportunities for closer association among persons interested in problems relating to human inheritance and especially to encourage research in human heredity.

Three categories of membership exist: regular, corresponding and associate. Corresponding members are those residing outside North America and associate members are bona fide medical or graduate students.

The first issue of the *Journal* was published in September 1949. Contents of the official organ of the Society include research articles, bibliographies of recent publications and book reviews.

AMERICAN SOCIETY OF PLANT TAXONOMISTS

Total membership: approximately 650. **Types of membership:** active. **Dues:** $2.50 per year (includes journal). **Journal:** THE TAXONOMIC INDEX. **Officers:** President: David D. Keck; Chairman of Council: Rogers McVaugh; Treasurer: Robert C. Foster; Secretary: Reed C. Rollins, Gray Herbarium, Harvard University, 79 Garden Street, Cambridge 38, Mass.

The American Society of Plant Taxonomists was organized by a group of botanists at an informal meeting in St. Louis, Missouri, in December 1935. The need for a society to serve the interests of taxonomy had been keenly felt and frequently discussed by leading professional taxonomists on numerous occasions prior to the organizational meeting. The first chairman was the late Dr. Aven Nelson, who served for one year until a regular election was held. At this election H. A. Gleason became the first President of the Society. The object of the Society as stated is "to promote the interests of taxonomy and systematic botany of vascular and non-vascular plants and the scientific welfare of its members. These interests are held to embrace phylogeny, phytogeography, ecology, floristics, and allied subjects, and the methods of experimental botany, of morphology and of other disciplines, insofar as they bear upon taxonomy, as well as those of the herbarium."

Membership in the Society is open to anyone interested in its objectives as an organization. The membership at present is made up of both professional and advanced amateur botanists and field collectors. The largest number are residents of the United States and Canada but many of the Central and South American countries as well as a number of Old World Countries are represented. The affairs of the Society are in the hands of an elected Council of seven members, whose chairman is the Executive Director. The Presidency is largely an honorary position; the President delivers the annual address to the members. A Secretary and Treasurer are appointed by the Council.

The Society publishes *The Taxonomic Index,* issued bimonthly, as a guide to the literature concerning the systematics of the plants of the Western Hemisphere. A subscription to this journal is included in the yearly dues.

It is at present the policy of the American Society of Plant Taxonomists to meet annually with the Systematic Section of the Botanical Society of America, where symposia and scientific papers are jointly sponsored. As a member of the *AIBS,* it is probable that this Society will continue to meet under its sponsorship.

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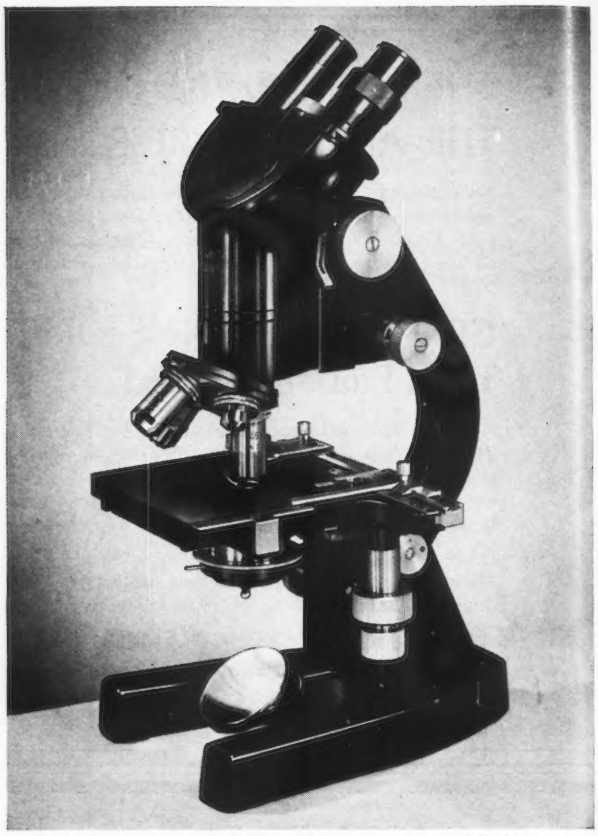

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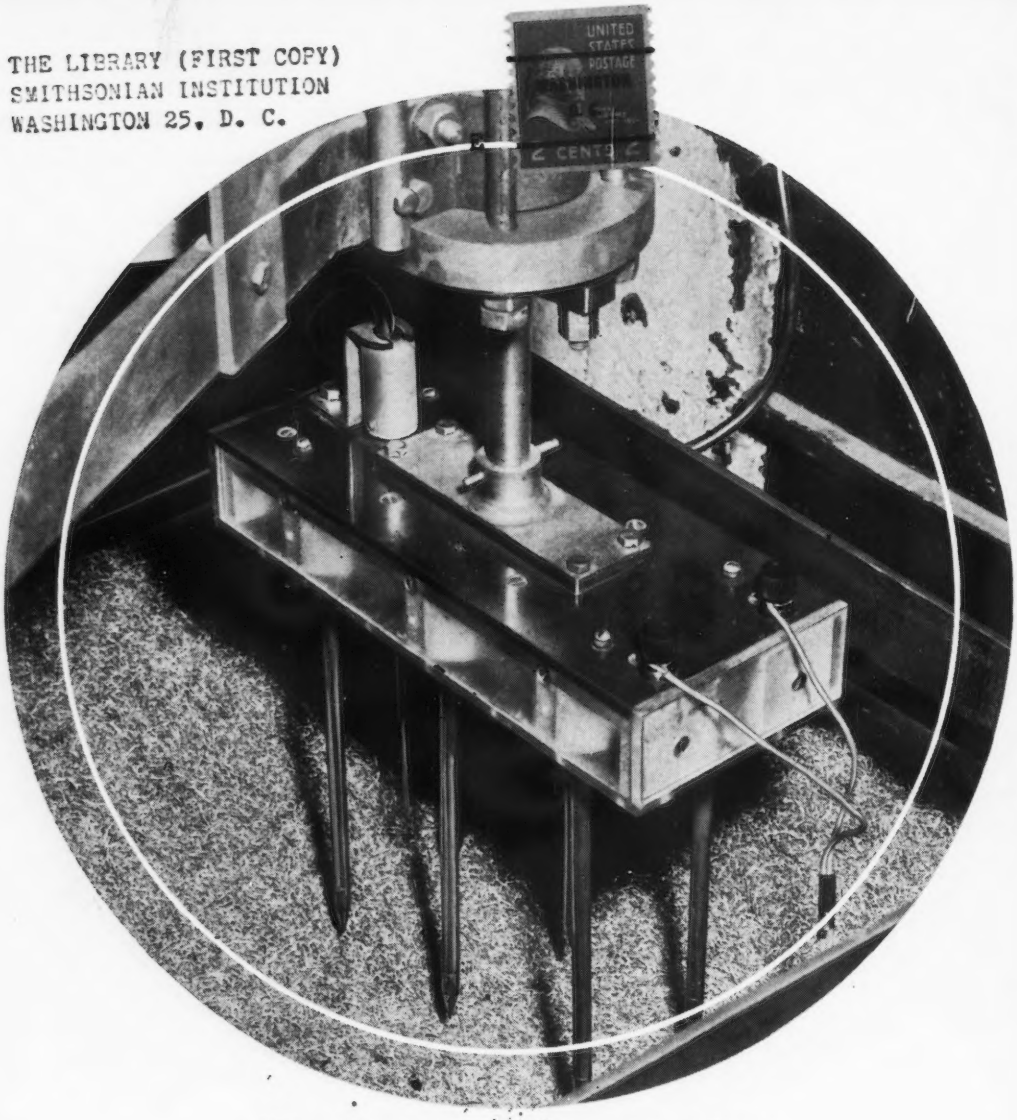

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